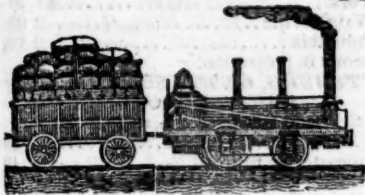
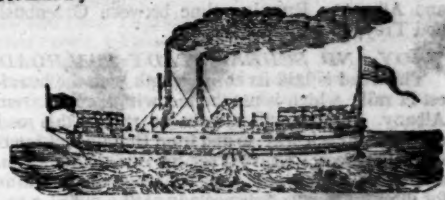


AMERICAN RAILROAD JOURNAL, AND GENERAL ADVERTISER

FOR RAILROADS, CANALS, STEAMBOATS, MACHINERY,
AND MINES.



ESTABLISHED 1831.



PUBLISHED WEEKLY, AT No. 105 CHESTNUT STREET, PHILADELPHIA, AT FIVE DOLLARS PER ANNUM.
SECOND QUARTO SERIES, VOL. II., No. 48.] SATURDAY, NOVEMBER 28, 1846. [WHOLE No. 545, VOL. XIX.

REMOVAL.—It is respectfully requested that all letters, exchange papers, and periodicals, for the RAILROAD JOURNAL, may be sent to PHILADELPHIA, as the Journal will hereafter be published there, and the office will be kept at the FRANKLIN HOUSE, No. 105 Chestnut street.

Owing to preparations for the removal of the printing materials to Philadelphia, and other causes, the last number (47) of the Journal has been delayed a few days, and the present number is issued in advance of its regular day. The next number, and hereafter it will be published in Philadelphia—office 105 Chestnut street, at the FRANKLIN HOUSE.

Those subscribers who are about remitting the amount due on their subscription up to the close of the present year, will please address their letters immediately to PHILADELPHIA, instead of New York, and much oblige the proprietor and editor, D. K. MINOR.

BOSTON AND PROVIDENCE RAILROAD. Passenger Notice. Summer Arrangement. On and after Monday, April 6, 1846, the Passenger Trains will run as follows:

For New York—Night Line, via Stonington. Leaves Boston every day, but Sunday, at 5 p.m.
Accommodation Trains, leave Boston at 7½ a.m. and 4 p.m., and Providence at 8 a.m. and 4½ p.m.
Dedham trains, leave Boston at 8 a.m. 12½ m., 3½ p.m., and 6½ p.m. Leave Dedham at 7 a.m. and 9½ a.m. and 2½ and 5½ p.m.
Stoughton trains, leave Boston at 11½ a.m. and 5½ p.m. Leave Stoughton at 7:20 a.m. and 3½ p.m.
All baggage at the risk of the owners thereof.

W. RAYMOND LEE, Sup't.

BRANCH RAILROAD AND STAGES CONNECTING WITH THE BOSTON AND PROVIDENCE RAILROAD.
Stages connect with the Accommodation trains at the Foxboro' Station, to and from Woonsocket. At the Seekonk Station, to and from Lonsdale, R. I. via Pawtucket. At the Sharon Station, to and from Walpole, Mass. And at Dedham Village Station, to and from Medford, via Medway, Mass. At Providence, to and from Bristol, via Warren, R. I.—Taunton, New Bedford and Fall River cars run in connection with the accommodation trains.

BOSTON AND MAINE RAILROAD. Upper Route, Boston to Portland via, Reading, Andover, Haverhill, Exeter, Dover, Great Falls, South & North Berwick, Wells, Kennebunk and Saco.

Winter Arrangement, 1846-7.

On and after October 5th, 1846, Passenger Trains will leave daily, (Sundays excepted,) as follows:
Boston for Portland at 7½ a.m. and 2½ p.m.
Boston for Great Falls at 7½ a.m., 2½ and 3:25 p.m.

Boston for Haverhill at 7½ and 11½ a.m., 2½, 3:25 and 5 p.m.

Boston for Reading at 7½ and 11½ a.m., 2½, 3:25 and 6½ p.m.

Portland for Boston at 7½ a.m., and 3 p.m.
Great Falls for Boston at 6½ and 9½ a.m., and 4½ p.m.

Haverhill for Boston at 7½, 8½, and 11 a.m. and 3 and 6½ p.m.

Reading for Boston at 7, 8½ and 9½ a.m., 12 m., 1½, 4 and 7½ p.m.

The Depot in Boston is on Haymarket Square. Passengers are not allowed to carry Baggage above \$50 in value, and that personal Baggage, unless notice is given, and an extra amount paid, at the rate of the price of a Ticket for every \$500 additional value.

1y31

CHAS. MINOT, Super't.

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.

On and after Friday, May 1st, 1846, the cars will run as follows:

Leave City Hall for Yorkville, Harlem and Morrianna, at 7, 8, 9, 10 and 11 a.m., and at 1, 2, 3, 30, 4, 30, 5, 6, and 6:30 p.m.

Leave City Hall for Fordham and Williams' Bridge, at 7, 10 and 11 a.m., and at 2, 3, 30, 5, and 6:30 p.m.

Leave City Hall for Hunt's Bridge, Bronx, Tuckahoe, Hart's Corners and White Plains, at 7 and 10 a.m., and at 2 and 5 p.m.

Leave Harlem and Yorkville, at 7, 10, 8, 10, 9, 10, 11, 10 a.m., and at 12, 40, 2, 3, 10, 5, 10, 5, 30, 6, 10, and 7 p.m.

Leave Williams' Bridge and Fordham, at 6, 45, 7, 45, and 10, 45 a.m., and at 12, 15, 2, 45, 4, 45, and 5, 45 p.m.

Leave White Plains, at 7 and 10 a.m., and at 2 and 5 p.m.

The freight train will leave the City Hall at 1 o'clock, p.m., and leave White Plains at 1 o'clock in the morning.

On Sundays, the White Plains train will leave the City Hall at 7 a.m. and 5:30 p.m.; will leave White Plains at 7 a.m. and 6 p.m.

On Sundays, the Harlem and Williams Bridge trains will be regulated according to the state of the weather.

SUMMER ARRANGEMENT.—NEW YORK AND ERIE RAILROAD LINE, from April 1st until further notice, will run daily (Sundays excepted) between the city of New York and Middletown, Goshen, and intermediate places, as follows:

FOR PASSENGERS—

Leave New York at 7 A.M. and 4 P.M.

" Middletown at 6½ A.M. and 5½ P.M.

FARE REDUCED to \$1.25 to Middletown—way in proportion. Breakfast, supper and berths can be had on the steamboat.

FOR FREIGHT—

Leave New York at 5 P.M.

" Middletown at 12 M.

The names of the consignee and of the station where to be left, must be distinctly marked upon each article shipped. Freight not received after 6 P.M. in New York.

Apply to J. F. Clarkson, agent, at office corner of Duane and West sts. H. C. SEYMOUR, Sup't. March 25th, 1846.

Stages run daily from Middletown, on the arrival of the afternoon train, to Milford, Carbondale, Honesdale, Montrose, Towanda, Owego, and West; also to Monticello, Windsor, Binghamton, Ithaca, etc., etc. Agent on board. 13 if

NORWICH AND WORCESTER RAILROAD. Summer Arrangement, commencing Monday, April 6, 1846.

Accommodation Trains, daily, except Sunday. Leave Norwich, at 6 a.m., and 4½ p.m. Leave Worcester, at 10 a.m., and 4½ p.m.

The morning Accommodation Trains from Norwich, and from Worcester, connect with the trains of the Boston, and Worcester and Western railroads each way.

The Evening Accommodation Train from Worcester connects with the 1½ p.m. train from Boston.

New York Train via Long Island Railroad: Leave Allyn's Point for Boston, about 1 p.m., daily, except Sunday.

Leave Worcester for New York, about 10 a.m., stopping at Webster, Danielsonville, and Norwich.

New York Train via Steamboat—Leave Norwich for Boston, every morning, except Monday, on the arrival of the steamboat from New York, stopping at Norwich and Danielsonville.

Leave Worcester for New York, upon the arrival of the train from Boston, at about 4½ p.m., daily, except Sunday, stopping at Webster, Danielsonville and Norwich.

Freight Trains daily each way, except Sunday. Special contracts will be made for cargoes, or large quantities of freight, on application to the superintendent.

Fares are Less when paid for Tickets than when paid in the Cars. J. W. STOWELL, Sup't.

1y18 321y

TROY RAILROADS.—IMPORTANT NOTICE.

Troy and Greenbush Railroad, forming a continuous track from Boston to Buffalo and Saratoga Springs.

This road is new, and laid with the heaviest iron H rail. Trains will always be run on this road connecting at Greenbush each way with the trains to and from Boston and intermediate places, leaving Greenbush daily at 11 p.m. and 6 p.m., or on arrival of the trains from Boston; leave Troy at 7 a.m. and 4 p.m., or to connect with trains to Boston.

Trains also run hourly on this road between Troy and Albany. Running time between Greenbush and Troy, 15 minutes.

TROY AND SCHENECTADY RAILROAD.

This road is laid its entire length with the heaviest H rail—which is not the fact with the road from Albany. Trains will always be run on this road connecting each way, to and from Buffalo and intermediate places. Leave Troy for Buffalo at 7 a.m. and 1 p.m. and 6 p.m., or to connect with the trains for the west; leave Schenectady at 2 a.m., 8 a.m., 1 p.m. and 3 p.m., or on arrival of the trains from Buffalo and intermediate places.

TROY AND SARATOGA RAILROAD.

THE ONLY DIRECT ROUTE.

No change of passenger, baggage or other cars on this route. Cars leave Troy for Ballston, Saratoga Springs, Lake George and White Hall at 7 a.m., (arriving one hour in advance of the train from Albany), and at 3 p.m. Returning, leave Saratoga at 9 a.m. and 3 p.m., (reaching Troy in time for the evening boats to New York.) Cars also leave Troy for the Burrough at 3 p.m. and 7 p.m., connecting with packet boats for the north. This takes passengers from New York and Boston to Montreal in 44 hours.

N.B. Travellers will find the routes through Troy most convenient and economical, and as expeditious as any other. The steamboats to and from New York land within a few steps of the railroad office, and passengers are taken up and landed by the different railroad lines at the doors of principal hotels, thus saving all necessity for, and annoyance from, hack drivers, cabmen, runners, etc.

Aug. 3, 1846.

1y 32

THE BEST RAILROAD ROUTE TO THE Lake and Buffalo, from Cincinnati.

Take Cars to Xenia, 65 miles; take Stage to Mansfield, 88 miles; thence by Cars to Sandusky, 56 miles to the Lake; thence Steamboat to Buffalo, 230 miles.

Fare from Cincinnati to Sandusky \$8 00
" " Sandusky to Buffalo, Cabin 6 00
" " " " Steerage 4 50

Fare by this route, although the cheapest across the state, will be reduced in a short time, railroad lengthened, and speed increased.

Leave Cincinnati in the morning, arrive at Columbus at night.

Leave Columbus in the morning, arrive at Sandusky same day.

Leave Sandusky, by Boat, in the morning, arrive at Buffalo next morning in time for the Cars north and east for Niagara Falls, Canada, Saratoga Springs, Troy, Albany, Boston, New York, Washington, or Philadelphia.

Passengers should not omit to pay their fare through from Cincinnati to Sandusky, or from Columbus to Sandusky via Mansfield; as this route is the only one that secures 56 miles [this road is run over in 2h. 50m.] most railroad which is new, and is the shortest, cheapest and most expeditious across the state.

Fares on the New York railroads are about to be reduced.

B. HIGGINS, Sup't, etc.
M. & S. C. R. R. Co.

Sandusky, Ohio.

RAILROAD IRON.—THE "MONTGOMERY" Iron Company, Danville, Pa., is prepared to execute orders for the heavy Rail Bars of any pattern now in use, in this country or in Europe, and equal in every respect in point of quality. Apply to **MURDOCK, LEAVITT & CO.,** Agents.

Corner of Cedar and Greenwich Sts.

43 1y

NEW RAILROAD ROUTE FROM Buffalo to Cincinnati.

Passengers destined for Columbus and Cincinnati, O., Louisville, Ky., St. Louis, Mo., Memphis, Tenn., Vicksburg, Natches, New Orleans, and all intermediate ports, will find a new, and the most expeditious and comfortable Route, by taking Steamboats at Buffalo, landing at Sandusky City, Ohio, distance 230 miles.

From thence by Cars, over the Mansfield Railroad which is new and just opened [laid with heavy iron,] to Mansfield, distance 56 "

Thence by Stage via Columbus to Xenia over gravel and Macadamized Road, (the best in the state,) in new coaches, distance 88 "

Thence, over the Little Miami Railroad, from Xenia to Cincinnati, distance 65 "

TIME.

From Buffalo to Sandusky 24 hours.

Leave Sandusky 5 a.m. to Columbus 14 "

From Columbus to Cincinnati 15 "

Or say 30 hours from Sandusky to Cincinnati over this route, including delays.

FARE.

From Buffalo to Sandusky, Cabin \$6 00

" " " " Steerage 3 00

" Sandusky to Columbus 4 50

" " through to Cincinnati 8 00

Passengers should not omit to pay their fare through from Sandusky City to Cincinnati and take receipts availing themselves of the benefit of a contract existing between the said Railroad and Stage Co's, securing 121 miles travel by good Railroad and 88 miles by Stage, in crossing from Lake Erie to the Ohio river, in the space of 30 hours.

Passengers destined for St. Louis, or any point below on the Mississippi, will save by taking this route, from 4 to 6 days time and travel, and nearly half the expense, over the Chicago and Peoria route to the above places.

Fare by this route, although the cheapest, will in a short time be reduced, Railroad lengthened, and speed increased.

B. HIGGINS, Sup't, etc.
M. & S. C. R. R. Co.

Sandusky City, Ohio.

BALTIMORE AND OHIO RAILROAD.

MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7 a.m. and 5 p.m.

Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13y1

THE SUBSCRIBER IS PREPARED TO execute at the Trenton Iron Works, orders for Railroad Iron of any required pattern, and warranted equal in every respect in point of quality to the best American or imported Rails. Also on hand and made to order, Bar Iron, Braziers' and Wire Rods, etc., etc.

PETER COOPER, 17 Barling Slip.

New York.

BALTIMORE AND SUSQUEHANNA Railroad.—Reduction of Fare.

Morning and Afternoon Trains between Baltimore and York.—The Passenger trains run daily, except Sunday, as follows:

Leaves Baltimore at 9 a.m. and 3 1/2 p.m.
Arrives at 9 a.m. and 6 1/2 p.m.
Leaves York at 5 a.m. and 3 p.m.
Arrives at 12 1/2 p.m. and 8 p.m.
Leaves York for Columbia at 1 1/2 p.m. and 8 a.m.
Leaves Columbia for York at 8 a.m. and 2 p.m.

FARE.

Fare to York \$1 50
" Wrightsville 2 00
" Columbia 2 12 1/2

Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg \$9

Or via Lancaster by railroad 10

Through tickets to Harrisburg or Gettysburg 3

In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at 5 1/2 p.m.

Returning, leaves Owing's Mills at 7 a.m.

D. C. H. BORDLEY, Sup't.

31 1y Ticket Office, 63 North st.

LEXINGTON AND OHIO RAILROAD.

Trains leave Lexington for Frankfort daily, at 5 o'clock a.m., and 2 p.m.

Trains leave Frankfort for Lexington daily, at 8 o'clock a.m. and 2 p.m. Distance, 28 miles. Fare \$1 25.

On Sunday but one train, 5 o'clock a.m. from Lexington, and 2 o'clock p.m. from Frankfort.

The winter arrangement (after 15th September to 15th March) is 6 o'clock a.m. from Lexington, and ma. 9. from Frankfort, other hours as above.

351y

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston,

on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculum Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily \$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculum 22 00

The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

1y25 JOHN KING, Jr, Agent.

CENTRAL RAILROAD-FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers and Freight. Rates of Passage, \$8 00. Freight—

On weight goods generally... 50 cts. per hundred.

On measurement goods 13 cts. per cubic ft.

On brls. wet (except molasses and oil) \$1 50 per barrel.

On brls. dry (except lime) 80 cts. per barrel.

On iron in pigs or bars, castings for mills, and unboxed machinery 40 cts. per hundred.

On hhd. and pipes of liquor, not over 120 gallons \$5 00 per hhd.

On molasses and oil \$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE, y40 Gen'l. Sup't. Transportation.

MANUFACTURE OF PATENT WIRE

Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by JOHN A. ROEBLING, Civil Engineer, Pittsburg, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition.

2v19 1y

GEORGE VAIL & CO., SPEEDWELL IRON Works, Morristown, Morris Co., N. J.—Manufacturers of Railroad Machinery; Wrought Iron Tires, made from the best iron, either hammered or rolled, from 1½ in. to 2½ in. thick.—bored and turned outside if required. Railroad Companies wishing to order, will please give the exact inside diameter, or circumference, to which they wish the Tires made, and they may rely upon being served according to order, and also punctually, as a large quantity of the straight bar is kept constantly on hand.—Crank Axles, made from the best refined iron; Straight Axles, for Outside Connection Engines; Wrought Iron Engine and Truck Frames; Railroad Jack Screws; Railroad Pumping and Sawing Machines, to be driven by the Locomotive; Stationary Steam Engines; Wrought Iron work for Steamboats, and Shafting of any size; Grist Mill, Saw Mill and Paper Mill Machinery; Mill Gearing and Mill Wright work of all kinds; Steam Saw Mills of simple and economical construction, and very effective Iron and Brass Castings of all descriptions. 1y1

VALUABLE PROPERTY ON THE MILL Dam For Sale. A lot of land on Gravelly Point, so called, on the Mill Dam, in Roxbury, fronting on and east of Parker street, containing 68,497 square feet, with the following buildings thereon standing.

Main brick building, 120 feet long, by 46 ft wide, two stories high. A machine shop, 47x43 feet, with large engine, face, screw, and other lathes, suitable to do any kind of work.

Pattern shop, 35x32 ft, with lathes, work benches, Work shop, 86x35 feet, on the same floor with the pattern shop.

Forge shop, 118 feet long by 41 feet wide on the ground floor, with two large water wheels, each 16 feet long, 9 ft diameter, with all the gearing, shafts, drums, pulleys, &c., large and small trip hammers, turnaces, forges, rolling mill, with large balance wheel and a large blowing apparatus for the foundry.

Foundry, at end of main brick building, 60x45 feet two stories high, with a shed part 45x20 feet, containing a large air furnace, cupola, crane and corn oven.

Store house—a range of buildings for storage, etc., 200 feet long by 20 wide.

Locomotive shop, adjoining main building, fronting on Parker street, 54x25 feet.

Also—A lot of land on the canal, west side of Parker st., containing 6000 feet, with the following buildings thereon standing:

Boiler house 50 feet long by 30 feet wide, two stories.

Blacksmith shop, 49 feet long by 20 feet wide.

For terms, apply to **HENRY ANDREWS**, 48 State st., or to **CURTIS, LEAVENS & CO.**, 100 State st., Boston, or to **A. & G. RALSTON & Co.**, Philadelphia. ja4

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1 in. in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T's, L's, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

RAILROAD IRON.—THE NEW JERSEY Iron Company, Boonton, N. J., are now preparing to make Railroad Bars, and are ready to take orders or make contracts for Rails, deliverable after the first of December next. Apply to

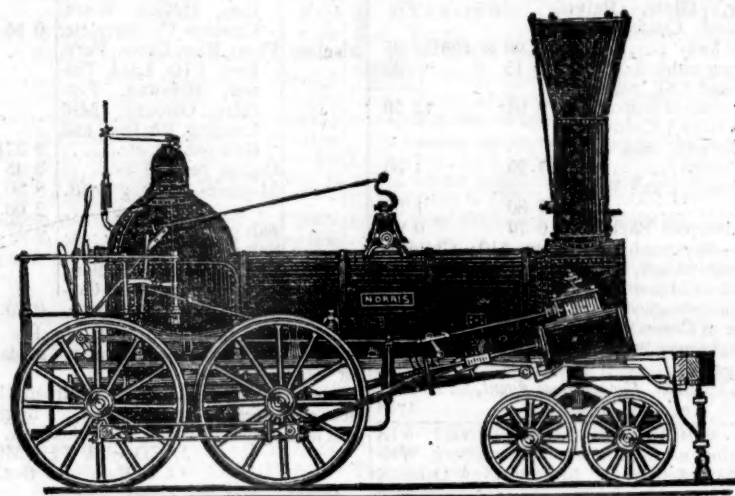
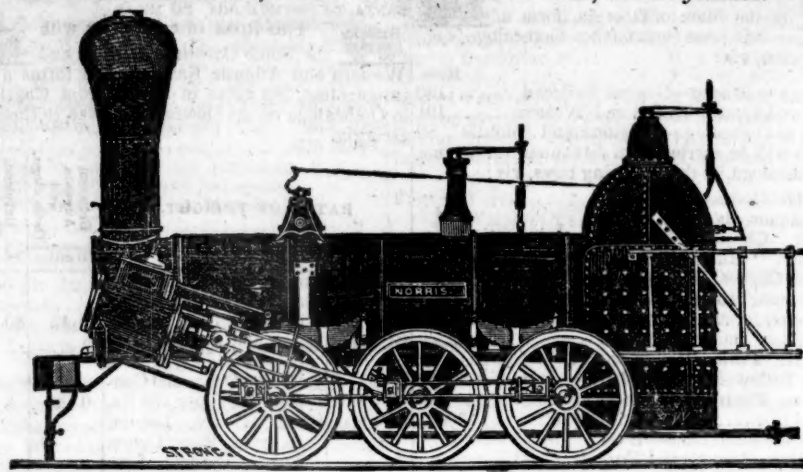
FULLER & BROWN, Agent.

No. 139 Greenwich, corner of Cedar street.

September 18, 1846. 10:35

NORRIS' LOCOMOTIVE WORKS.

BUSH HILL, PHILADELPHIA, Pennsylvania.



MANUFACTURE their Patent 6 Wheel Combined and 8 Wheel Locomotives of the following descriptions, viz:

Class	1,	15 inches Diameter of Cylinder,	× 20 inches Stroke.
"	2,	14	" " × 24 " "
"	3,	14½	" " × 20 " "
"	4,	12½	" " × 20 " "
"	5,	11½	" " × 20 " "
"	6,	10½	" " × 18 " "

With Wheels of any dimensions, with their Patent Arrangement for Variable Expansion. Castings of all kinds made to order; and they call attention to their Chilled Wheels, for the Trucks of Locomotives, Tenders and Cars.

NORRIS, BROTHERS.

THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention. **ANDREW C. GRAY,** a45 President of the Newcastle Manuf. Co.

RAILROAD IRON AND LOCOMOTIVE Tyres imported to order and constantly on hand by **A. & G. RALSTON** 4 South Front St., Philadelphia. Mar. 201f

KEARNEY FIRE BRICK. F. W. BRINLEY, Manufacturer, Perth Amboy, N. J. Guaranteed equal to any, either domestic or foreign. Any shape or size made to order. Terms, 4 mos. from delivery of brick on board. Refer to

James P. Allaire, } New York.
Peter Cooper, }
Murdoch, Leavitt & Co. }
J. Triplett & Son, Richmond, Va.
J. R. Anderson, Tiedegar Iron Works, Richmond, Va.
J. Patton, Jr. } Philadelphia, Pa.
Colwell & Co. }
J. M. L. & W. H. Scovill, Waterbury, Conn.
N. E. Screw Co. } Providence, R. I.
Eagle Screw Co. }
William Parker, Supt. Bost. and Worc. R. R.
New Jersey Malleable Iron Co., Newark, N. J.
Gardiner, Harrison & Co. Newark, N. J.
25,000 to 30,000 made weekly. 35 1y

Railway System.

The following extract is taken from the evidence of Mr. Cubitt before the select committee of the house of lords. Instead of recommending for general adoption the gauge of those railways in which he himself is particularly interested, Mr. Cubitt appears to view the question on its general merits.—He says:

I think an uniform gauge might be made throughout the kingdom, which will be better than either of the present gauges, and at a very moderate cost; at a cost which would be scarcely felt by the railway companies.

Can you make any sort of estimate of what the expense of the alteration would be? Not a decided estimate what it would cost to alter the gauges; but I could state a minimum and a maximum. I would say it would cost from £500 to £1000 per mile to alter the gauges. That is not a large sum.

Will you state how you would propose to alter the gauges? It is a thing very easy to do practically; but there is a little to be cleared away first. Almost all persons think or are taught by a certain class of persons to think, that if we were to alter the narrow gauge to a wider gauge it would be necessary to alter the existing bridges and tunnels, and so on, through which the carriages pass. Now that is not at all necessary; the carriages on the Birmingham line, and the generality of carriages almost, are sufficiently large for any gauge whatever; their postoffice carriages, and their large horse boxes, and the very largest trucks, are sufficiently wide for any gauge that could be a fair workable gauge. They are big enough for the wide gauge, for I believe their postoffice carriages are as large as the Great Western passenger carriages. That being premised, it will be evident that if we take for example the large carriages of the London and Birmingham railway, which now pass upon that line through the bridges and tunnels, and pass within a certain distance of each other, and pass safely, you have only to suppose the carriages to remain unmoved sideways, and simply to imagine that the wheels are slipped right and left, brought out a little, about six or eight inches. A six feet gauge would work with the wheels set within the breadth of those large carriages, and the carriages would run exactly in the track as they did before. Consequently, if you do, that there is no necessity for any alteration of the tunnels, etc., about which so much objection is made. If we want to make the gauge wider we have only to bring the rails out about eight inches on each side, and there is still plenty of room.

You only alter the under carriage? Yes. You put the wheels at a greater distance? Yes; and the wheels will still be within the width of the carriages. Therefore, as the carriages pass each other now at a certain distance, they will still continue to pass each other at the same distance. The gauge will be a better gauge, and it will enable us to bring the centre of gravity of the engine lower down, as well as to widen the gauge.

Do you consider that the bringing the centre of gravity of the engine lower is a very

important point for safety? Yes; but that has never been done yet.

And practically the carriages now in use upon the narrow gauge are of such a width as to allow of that operation? Yes. Since this thing has been rather more upon my mind I have given particular attention to it. I have now the prospect of having some control over nearly 1000 miles of railway between the north and south, in large and direct lines, and I should be most happy if I could see my way open to improve the gauge which might be adopted in the first instance.

You have stated that there is no difficulty as to bridges and tunnels; is there any as to embankments? There is no difficulty as to embankments; no carriage overhangs the embankments.

It ought not to do so? I believe it never does. The means of widening that I should employ would be very simple. The rails are almost all laid upon cross sleepers or upon stone blocks; now with respect to those which are laid upon cross sleepers, it has been stated that it would cost a great deal to alter the railway because of the cost of taking it up and re-laying it altogether. Now I will undertake to widen the gauge, if the road is in good order, in a very little time and at very little cost, and without disturbing a single rail on its chair, or a single chair in its sleeper. I should simply cut with a saw through the sleeper in the middle of the line, and just put each out eight inches, and then nail a short piece of wood in to connect the two parts of the sleeper. The thing would cost very little to do.

Would that leave you with a trustworthy sleeper? Yes. And we will take the case of stone blocks. A great many miles of some of our greatest lines are laid with stone blocks; simply a small block upon the ballast. They will only want removing six or eight inches out.

The alteration, at all events, of the permanent way could be made without stopping the traffic? Certainly. I am now going to re-lay a line entirely; a new set of rails and fixtures altogether, and I shall not stop the traffic; yet there are 80 trains a day on that line, or 40 each way.

Where is that? From London to Croydon.

Do you consider that there is room for great improvement in the permanent way? The permanent way is the most defective part of the railway system.

Are not many of the rails that have been laid down upon the lines at present at work too light? The rails are, many of them, too light; but we can always meet light rails by a different mode of laying them. But the great defect is the want of proper attention to the fastenings of the rails and the chairs. I attribute almost all the accidents that have happened from engines and wagons and carriages getting off lines of railway to the imperfect state of the road; and yet no sooner has an accident happened, than the engineers go to examine the engines, and examine the carriages, to find out what is the matter.—The fact is, the cause is done away with; because it generally happens in most of those

cases from the ends of the rails getting out of the joint chairs, or the end getting loose, that it must inevitably throw off the engine, and throwing off the engine it tears up the line at the place, and we never can see it, because it is done away with. I have seen 100 yards of line torn up entirely from an engine running off the rails.

There was an accident not long ago upon the Brandling Junction, where the engineering officer sent down to report upon it stated that he could discover no cause for it. Do you think that it probably was from some defect of this kind? No doubt of it. I have witnessed an accident upon that very line. The engine and carriages tumbled over one another, and the line was torn up for 100 yards; but I knew from what had taken place just before upon the line, that that was from the defective state of the road.

You think that in the case referred to in the preceding question, when it was clearly proved that there was no fault in the arrangement of the points, or in the engine, in all probability there must have been some fault in the permanent way? Yes. When the permanent way is a little defective the shock becomes very sharp, and the rails resting in an imperfect chair, are apt to work out. I am now having chairs made with a very long socket, to prevent the ends of the rails getting out, for when one of those ends gets loose it jumps up or gets sideways, and it must throw the engine off, and in doing that it must break the chair to pieces.

One of the witnesses has stated, when the gauge commissioners were down near York, the engine they had went off the line, and was upset; and that that was occasioned very much by the great length of the engine; and that they found on the rail the marks showing where it had struck, by the great sway backwards and forwards, till it found a defective rail, and then it went off! I have seen rails and sleepers moved out of their place from the oscillations of an improper engine upon a badly laid road. I mean an engine not well balanced, and having too much play.

Do you think that if it were possible to get the weight lower down, by a greater width of gauge, it would in a great measure obviate that? The difficulty would be obviated altogether by a wider gauge, a better road, and an improved engine. We might then go 100 miles an hour with as great safety as we now do 30; there is nothing to limit the speed.

Is not it from the increased rate of speed that engines so frequently burst? No; it is a small tube that bursts; a tube about two inches diameter. There are about 90 to 126 of them in each boiler. After they have been used some time they wear thin, with the draught and the fine particles of coke; one tube may be a little defective in its making; and when a great pressure of steam and the action of the wear upon them cut them thin, sometimes they will burst, and the water will flow into this tube, and the steam will flow out, and stop the engine going.

Does that ever happen with any but fast trains? Yes; but you do not hear of it. In-

deed it would be rather less likely to occur with an increased rate of speed, because when the engine is driven very fast there is less pressure upon those tubes.*

When the directors of a railway are desirous of remedying the want of power, what is the expedient to which they have recourse? To build larger and more powerful engines. They require to be made either longer or larger to make them more powerful. Some of the engines on some of the lines, I believe are worked up to more than 100-horse power. That is an enormous thing in that space.

If for the purpose of increasing the power the expedient adopted is that of lengthening the engine, does not that increase the danger upon the narrow gauge? No; not the lengthening it, but the raising it higher makes it more dangerous. They have to make them higher when they make them larger and more powerful.

A witness stated the other day, that projecting the engine very much over the wheels, if they could not extend on account of the turntables, caused oscillation from the weight being fore and aft? So it does. That was the great defect of the engines on the Eastern counties railway, and caused the late accident on that railway. In making them longer it brings the wheels too far apart, and there was an overhanging weight.

Would not also the great length of the engine be inconvenient in a curve? The longer engines are between the wheels the more they are likely to impinge upon the rails in going round very sharp curves; but that is obviated in America upon another plan, and I recommend the plan very much to the gauge commissioners. I told them that all those things may be overcome with proper arrangements. On narrow gauge railway they cannot go so fast as on broad, because they cannot get as large driving wheels with safety, without carrying the centre of gravity too high. I could make an engine of any length which should be better adapted for going round curves than any engines now are.—For instance, an engine 20 feet long might be made perfectly safe and steady with very large driving wheels upon a narrow gauge, even with wheels as large as the Great Western wheels, simply by having what the Americans call a "bogy" carriage—a small carriage with four low wheels moving upon a centre horizontally. Imagine a small truck with four wheels upon the line; then imagine another small truck behind it with four wheels. Now those wheels and axles would be stronger than the present ones and lighter. Then if we support a very long boiler indeed upon those trucks, the trucks with four wheels can each turn independently at each end.—Then anywhere between those we may have large driving wheels without flanges, there being eight other wheels to take the weight at both ends. We might have the driving wheels of any height; then they would turn round curves very rapidly indeed. I explain this to show that there are no insurmountable

* It is asked with great deference whether the opinion be quite consistent with known mechanical principles. The pressure on the tube will generally increase with an increase of velocity.—Ed. C.E. & A.J.

difficulties mechanically, for the wheel might be improved in every respect.

Still you would recommend as the best security for safety, an alteration of the narrow gauge to a wider gauge? Yes; to a reasonable gauge. The lower the centre of gravity the greater the safety.

Will you state what width of gauge you consider the best? A six feet gauge I take to be about the best that could be adopted, or it might be five eleven or six feet one; a few inches more or less is of no consequence, but six feet is about the best gauge; it is an integral measure, it is an even measure, it is an easy measure, and it is of easy reference and well understood.

Is that the gauge which was recommended by the commissioners upon the Irish railways? They recommended six feet two inches; but I do not know why the two inches was put on.

Have you ever made any estimate of the cost of altering the carriages or wagons?—The first, second and third class carriages will cost about the same sum almost to alter. The average passenger carriages may be altered from a four feet eight inches and a half to a six feet gauge at an average cost of £30 each, and I think for less.

By multiplying the number of carriages constituting the stock of the different companies at present at work you could ascertain the total cost of altering the carriages? Yes. And it would cost £350 to £400 to alter an engine and tender, leaving the working parts exactly as they are now.

So that it would be perfectly possible to ascertain the total cost of the alteration. Yes.

Have you ever turned your attention to the means of providing the necessary sums to defray the expense of the alteration? I think it should be paid for partly by time gone by and partly by futurity; that is to say, money might be taken up at a certain rate of interest for doing this work, either from government or by transferable bonds, payable off by lot; anything of that sort. Then the works should be paid for as they were done. Whatever they cost should be apportioned, as nearly as it could be, over about 40 years; that is 20 by gone years, and 20 future years of railway extension; and all the newly made railways should pay their quota of the alteration as the past had paid; so that in 40 years, or 45 or 50 years, the thing should be paid off and the work all done. The work should be all done at once for the sake of the public. It would be paid for in a long time, for the sake of the parties. It would not tax any company harshly to make the alteration, and therefore they could not complain of it in point of expense. All the new railways would have to pay a quota for the same thing, although they would make their gauges right in the first instance. I think that is but fair.

You have no doubt that it would be of considerable advantage to the country in many points of view that there should be but one uniform gauge? There can be no doubt about that.

Both for traffic and for the military defences of the country? Yes; in every respect; I will not make one exception, because I do not think one can be made. But I should be sorry to see other narrow gauge lines granted if there is likely to be an alteration, because there will be many miles of new railway; many more than are made; I think twice as many.

You think this is a good opportunity for making the alteration? I think if the thing is ever to be done, there should not be a season lost, certainly. I think the thing may be easi-

ly done, and economically done, and done without loss to the public and without loss to the companies, and in a very short time, and at a very moderate expense.

You think it is very important that if anything of the kind is contemplated it should be settled with the least possible delay, in consequence of the numerous railways now in progress? I think so. It is a very serious subject, but almost all parties who speak upon the subject are in some way or other interested in this, or the other gauge.

You think it is very important that it should be practicable to go at high speeds on railways for persons who have to go great distances? I think that is evinced every day, for if we put on express trains every day, and advertise to go at 60 miles an hour, people will risk their necks as long as you will carry them, and therefore it is highly necessary for the safety of the public (for people will not take care of themselves) to have all the machinery of the best kind, and if the permanent way is perfect, and the gauge a proper gauge, there is nothing to limit the speed but the resistance of the atmosphere. That I am sure of, as far as safety is concerned there is no danger.

No greater danger in going 60 than in going 30 miles an hour? On a perfect railway there is no more danger in going 60 miles an hour than in going 30.

But the mere alteration of the gauge to the improved width which you propose to make it would not at once attain the increased speed which you hope to attain? It would be the greatest step to it.

Draining of the Lake of Haarlem.

The following description of the engines constructed to drain a lake of 70 square miles, will be read with interest by many.

Gigantic Steam Machinery.—Two more enormous steam engines are now being manufactured at Cornwall, for the Haarlemmer commissioners, to be employed in draining the lake of Haarlem: they were designed by Messrs. Gibbs and Dean, of Westminster, the engineers to the commission, and are being built at the well known foundries of Messrs. Harvey and Co., of Hayle, and Messrs. Fox and Co., of Perran. The following are some of the leading features of these engines:—Each engine has two steam cylinders—one of 84 inches diameter, placed within another of 144 inches diameter. There are two pistons—the small one plain, and the larger annular (the small cylinder is turned outside, and bored inside.) Those pistons are 28 inches deep, cast with compartments, filled with cast iron plates, to serve as ballast. The pistons are united by five piston rods to a great cross head, having a circular body 9 ft. 3 in. diameter, and 3 ft. deep, with arms 17 ft. between the extremities. The circular body can be filled with plates of iron, if required. The pistons, piston rods, and great cross head, together present a dead weight of nearly 90 tons of iron. The engine house is a circular building, concentric to the cylinders, which are placed on a massive pedestal of masonry. In eight apertures in the wall of the building are placed as many large cast iron balance beams, radiating from the centre of the engine, to connect it with eight pumps of 73 inches diameter each, placed outside the building, four on either side, and opposite to each other. The dead weight of

90 tons is suspended from the inner end of the balance beams by eight straps, connected to the underside of the cross head, which is furnished with a central guide spindle, working through a stuffing box above. The extremities of the arms are also furnished each with two guide rods. By these means the perfect verticality of the dead weight is maintained at all times, and no parallel motions are required for the pump balances. The length of stroke in cylinders and pumps is 10 feet.

The action of the engine is very simple. The steam is first admitted under the small piston, and lifts the dead weight, and inner ends of pump balances, the pump pistons performing their down stroke: the steam in the small cylinder is then reversed by the equilibrium valve, and passes round upon the upper surfaces of the annular and small pistons—putting the latter in equilibrium, and pressing with two-thirds of its entire force upon the annular piston, beneath which a vacuum is always maintained. The dead weight, aided by the pressure on the annular piston, descends freely, elevating the pump pistons, and consequently bringing up the load of water—which, when the engine is working at its full lift, will be 112 tons net, lifted 10 ft. high per stroke. The steam is used expansively in both cylinders; there are two air pumps of 40 in. diameter, and 5 ft. stroke.

These engines are similar to the Leeghwater engine, with the exception that the latter works 11 pumps of 63 in. diameter, and the others will have only eight, but of 73 in. diameter, also designed by Messrs. Gibbs and Dean, for the Haarlem lake, and manufactured by Messrs. Harvey and Co., and Fox and Co., which has been erected and put to work last year. Its performance has been of a most satisfactory character in all respects.

Hitherto the average consumption of fuel by engines employed in draining land, has been 15 lbs. of coal per net horse power per hour, and, in many cases, even exceeded 20 to 25 lbs. In the Leeghwater engine the expenditure in fuel is reduced to 2½ lbs. per net horse power per hour, or from less than one-sixth to one-tenth only of the former amounts. In the economy of draining land by mechanical means, this is as great an improvement on the old system as is the modern system of railways over the ancient means of locomotion.

The work performed by this engine is unprecedented: it is capable of discharging 1,000,000 tons of water in 25½ hours. When the three engines are established, and at work, they will discharge 2,800,000 tons of water in 24 hours; and as the contents of the lake of Haarlem (which covers a surface of 70 square miles) is estimated at 1,000,000,000 tons of water, the whole, allowing for contingencies, will be pumped out in about 13 months—a feat in hydraulic engineering totally without parallel.

The cost of engines, buildings, fuel, and workmen, to perform this operation, will be £140,000; by the old system of engines, it would have exceeded £240,000; and by windmills, £320,000—the latter requiring

four years to complete the work. Until the Leeghwater was established in Holland, the wind was almost the only prime mover employed to drain the land; a general prejudice existed against the use of steam engines, because of the enormous expenditure of fuel (seldom less than 20 lbs. of coal per horse power per hour) rendered them more expensive than windmills of equal power as regards the cost of annual maintenance—indeed, by the old system of engines, the annual cost of keeping dry the bed of the lake of Haarlem, when once pumped out, would be £5,000 greater than by windmills—although the certainty of always having a sufficient supply of power at command, when required, would have rendered it preferable in other respects; but, by the new system, it will be about £1,000 less per annum than by windmills.—England cannot boast of having made any great advance over the Dutch in the matter of steam land draining engines; for a commission, sent to England in 1840, found that the steam machinery employed in the fens of Cambridge and Lincolnshire, was not superior to that employed in Holland. With one or two exceptions the land drainage engines, hitherto erected, have seldom exceeded 30 horse power.

It is necessary to bear these facts in mind, to appreciate the vast stride made by the Haarlem Meer commissioners, when they determined to erect the largest engines in the world, upon a system for which they had no precedent; not only had they to overcome the difficulties presented by nature, but to resist the numerous and weighty interests connected with the old systems of drainage, whose hostility to any new system was unbounded, as may be easily understood, when it is considered that the windmill system was regarded by nine-tenths of the people as the perfection of mechanical ingenuity; 18,000 of these machines exist in Holland, and represent an average force of 90,000 horses power, of which amount 60,000 are required to keep the country freed from water.

But the commissioners, being fully impressed with the grandeur of the undertaking committed to their care, after a long and laborious investigation of the old systems of steam and wind drainage machinery, determined that, as the drainage of so vast a body of water by mechanical means was unprecedented, so should also be the machinery employed, and the brilliant results obtained show the soundness of their judgment.

The prejudices of the Dutch in favor of their windmills is not without a parallel in England, where, it will be remembered, the economy of fuel in the engines used in Cornwall, over the engines employed elsewhere, was demonstrated during 20 years by daily action of some scores of engines; notwithstanding which, nine-tenths of the English engineers persisted in declaring, that the economy was entirely fabulous; and it was only when a Cornish engine was brought from Cornwall to London, about seven years since, and set up at the East London water works, that their prejudices gave way.

The drainage of the lake of Haarlem was

first proposed in 1621, by a Dutch engineer, of great talent, known by the *soubriquet* of "Leeghwater," (which, in Dutch, signifies "the drier up of water"), from his great success in draining numerous lakes in North Holland. At that period, the proposition to drain the lake of Haarlem by mechanical means was one of great boldness and originality. It was proposed to erect a statue to his memory, when the present works commenced, but it was happily suggested, that a more fitting monument in honor of him could not be found, than the gigantic steam engine about to be erected to consummate the great work originally projected by him more than two centuries before—hence the name "Leeghwater" given to the engine, which also admirably expresses its functions. The other engines are called respectively "Cruquius" and "Van Lynden," after two other worthies, who subsequently proposed plans for the drainage of the lake. It does honor to the generous feelings of the commissioners, that they should thus do homage to the memories of those, who, by their talent and exertions, have been the pioneers of this great and national enterprise.

THE MENAI TUBULAR BRIDGE.—STRENGTH OF TUBES.

Mr. W. Fairbairn, and Mr. E. Hodgkinson, have both been engaged in extensive and independent sets of experiments, to ascertain the best form to give to the beams, to be employed in the construction of the tubular bridge, by which the Chester and Holyhead railway is to be carried over the Menai straits. Mr. Fairbairn's experiments may be said to have only established this general fact—that hollow beams of wrought iron are about three times stronger than solid beams of the same form. Mr. Hodgkinson's experiments had, for their special object, to ascertain what sort of hollow beam is the best—oblong, or square, or cylindrical. From the results which are shown in the following table, it will be seen, that the cylindrical are, [as might have been, and was in fact, anticipated by Mr. Hodgkinson,] the strongest of all, and the square next in degree:

Cylindrical Tube.			
Weight of tube.	External diameter.	Length.	Greatest resistance.
47 lbs. 10 ozs.	3.34	.....	31,828 lbs.
45 " 15 "	2.99	.....	37,356 "
59 " 0 "	4.05	.....	47,215 "
64 " 4 "	4.06	.....	49,900 "
Rectangular Tube.			
48 " 14½ "	4.01 x 4.01	.....	19,649 "
65 " 8 "	8.15 x 4.01	.....	23,279 "
83 " 0 "	8.01 x 4.01	.....	43,663 "
91 " 1 "	8.00 x 8.00	.....	27,545 "

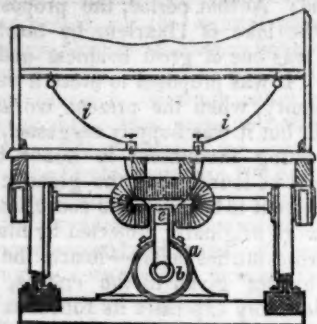
The rectangular tubes were all of plates 1-16th of an inch thick, and all simple rectangles, except the last but one, which had a partition in it, making it into two divisions. On the 14th inst., the railway company contracted for the construction of the first portion of this bridge, which is to be called the Britannia. It is 450 ft. span. The greatest span of any rigid bridge hitherto executed is 240 ft.—*Mechanic's Magazine*.

PROPELLING ON RAILWAYS AND CANALS.

William Hannis Taylor, of Piccadilly, gentleman, and Francis Roubiliac Condor, of Birmingham, civil engineer, for "certain improvements in propelling"—Granted Dec. 20, 1845; Enrolled June 20, 1846.

The object of this invention is to propel a train of carriages by means of electro magnetism in connection with the atmospheric principle, in the following manner: A tube *a* is laid betwixt the rails throughout the whole length of the line, having two pistons *b* mov-

ing within it, similar to the present mode of working atmospheric railways, with this difference, that in place of forming the connection between the piston and leading carriage by means of an arm passing through the longitudi-



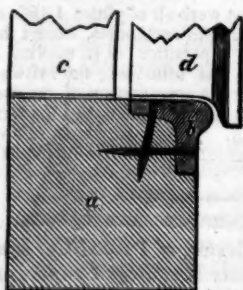
dinal opening, the inventors effect the above by means of powerful magnets *c* attached to one or more of the leading carriages of the train. On the top of the atmospheric tube *a*, which is provided with an opening of about three inches wide, there is firmly fixed a rectangular box of copper *d*, projecting above the tube about three inches, so that the longitudinal opening is covered as it were with an inverted trough. Within this box there is a piece of soft iron *e*, supported from the piston by means of a wood frame and arms *f*. The magnets *c*, are bent of such a form that the two ends or poles approach the sides of the copper box, or covering to the longitudinal opening, and fixed to the underside of the carriage; then being charged with the magnetic influence, by a galvanic battery, are attached by the piece of iron *e*, attached in the manner before described to the piston, so that the connection between the carriage and the piston is effected by means of powerful magnets, in place of an arm passing through the longitudinal opening as heretofore.*

NEW PLAN OF RAILS.

The following plan of rail has been patented by Moses Poole, of London, as we find in the Civil Engineer and Architects Journal, for June.

Moses Poole, of Lincoln's inn, in the county of Middlesex, gentleman, for "improvements in rails for railways." (A communication.) Granted Oct. 6, 1845; Enrolled April 6, 1846.

The invention consists in so constructing rails for railways, that the wheels of the locomotive engines may run on wood, and the wheels of the railway carriages may run on metal,



as shown in the annexed figure; *a* is a rail of wood armed with iron *b*, on the inner edge, *c* the wheel of a locomotive, & *d* the wheel of a carriage. The wheels of the locomotive engine being thus removed from off the metal rail will not be so liable to slip, particularly in damp weather, as has been heretofore the case, when the locomotive engines and railway carriages of the train all run on the same metal rails.

* The application of the above principle will be found in the specification of a patent granted to Mr. Henry Pinkus, in the year 1831.

Grand Blast

At the Downhill Tunnels, Londonderry and Coleraine Railway.

The following description of an extraordinary blast may be useful as well as interesting to our readers.

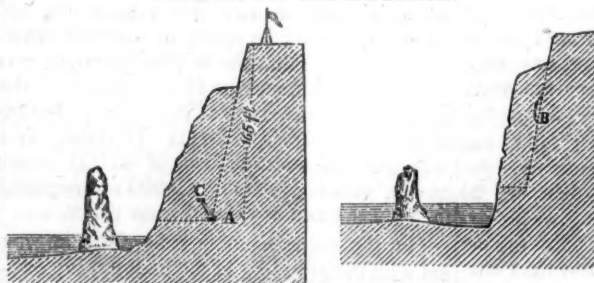
The novel nature of the undertaking proposed by the Londonderry and Coleraine railway company, has, from its first appearance before the public, invested that project with peculiar interest to the scientific and the monetary world.

Lough Foyle, a deep indentation of the sea on the northern coast of Ireland, covers an area of about 60,000 acres. With the exception of the channel along the Donegal shore, leading up to the port and city of Londonderry, the tide in this lough does not generally rise more than six feet, and, at low water, a large portion of its area is left perfectly dry, exposing a slob formed of the richest alluvial deposit, capable of immediate conversion into valuable soil. The situation of the lough—almost land locked, protected from the swell of the Atlantic by its narrow entrance, and sheltered from the prevailing westerly winds by the mountainous nature of the country on the Donegal coast—is such as at once to suggest the idea of facility for shutting off the sea, and reclaiming a great portion of the slob land. In the session of 1837, an act of parliament, authorizing this reclamation, was obtained, and two enclosures were made, winning from the sea about 4,000 acres, upon part of which luxuriant crops have already been reared. In 1844, public attention became alive to the necessity for establishing railway communication between the important towns of Londonderry and Coleraine. The mountainous nature of the interjacent country, rendered a line inland impracticable, and the idea was conceived of combining the railway and the Foyle reclamation, making one embankment serve for both. With this object a company was formed; terms were arranged with the parties in whom rested the powers under the act of 1837; and in the session of 1845, the Londonderry and Coleraine railway company obtained its act of incorporation.

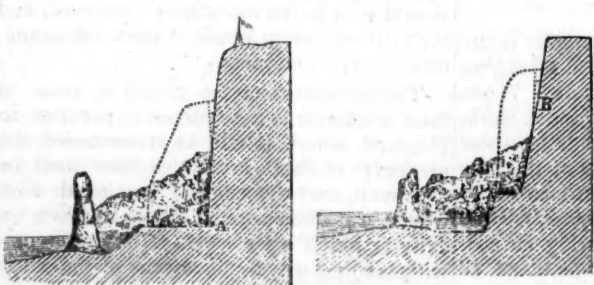
The length of line proposed by this company is 39 miles, including a branch to the town of Newtown-Limavady—15 miles to be constructed on an embankment through Lough Foyle; and by which embankment about 22,000 acres of land will be recovered from the sea. Of this reclaimed land, 12,000 acres are set apart to cover the expenditure on the railway. The works are now so far advanced, that by the end of the present year the directors anticipate being in a position to enclose and sell a portion of the land; and, as the works proceed, like portions may from time to time be enclosed and sold.

This line, after leaving Lough Foyle, proceeds eastward across Magilligan point, and along the coast towards Coleraine. About seven miles from the latter town, and close to Downhill, the beautiful residence of Sir Hervey Bruce, Bt., it passes through the cliffs between Downhill house and the sea by two tunnels, one about 700 yards and the other about 300 yards in length. The works upon those tunnels have been some time in progress by the ordinary process of picking and blasting; but it being deemed necessary to expedite their construction, it was determined to effect the removal of the obstructing rock by one grand blast.

ROCK BEFORE THE EXPLOSION.



ROCK AFTER THE EXPLOSION.



The smaller charge, which was higher up in the rock, and which is seen at B, contained 600 lbs. of powder; and the gallery BF leading to it was about 70 feet in length; this was also tamped in a similar manner to the larger one. The galvanic battery, which stood on a shed on the top of the cliff, was a very powerful one, consisting of 18 cells, each cell about 14 inches square.

The operations were conducted by Mr. Hemming and Mr. Webb superintending engineer to the contractor. Mr. McLeod, acting under Mr. Robert Stephenson, the engineer of the company, was present, with Mr. Langon, and other civil engineers. There were also seven-

We are indebted to the Illustrated News for the following particulars relative to an extensive blast which took place at Downhill, about seven miles from Coleraine, on the 6th June last: "The mass of rock which it had been originally necessary to remove was at the western mouth of the large tunnel, and measured nearly 60,000 tons, the material being the hard basaltic stone, in which the coast of Antrim and Londonderry abounds; a large portion of this rock had been previously removed by the common slow process already named. Having resolved upon the large blast, Messrs. Bromhead & Hemming, the contractors, formed a heading or gallery into the rock, from the side of the cliff, 50 feet in length: at the end of this a shaft was sunk, 22 feet to the level of the railway, as seen at C A; and again another gallery at the bottom, running at right angles to the first gallery, and further into the rock, was made for 10 feet. At the end of this was placed the large charge of powder, 2,400 lbs., shown at A. The whole was then well filled up, and tamped with clay and masonry, and the wires to convey the electric fluid from the battery through the rock were carefully arranged.

ral royal engineers and scientific gentlemen, who had come from different quarters of the country to witness the explosion.

At the appointed hour some little delay occurred in connecting the wires with the battery; but, at half past three o'clock, the two poles were united, and instantaneously the bottom of the rock was seen to heave out for a moment, the mass of rock above stood trembling, and, cracking in a thousand fissures, rolled into the sea beneath. A deep and hollow sound was heard, like distant thunder, but no report. The quantity of rock removed must be upwards of 30,000 tons. The effect will be seen by referring to the accompanying profiles or sections taken through the lines *a a*, *b b*, in the front view, both before and after the blast. The result, in an engineering point of view, was perfectly successful, and reflects the greatest credit on the gentlemen superintending the operation.

The dotted lines show the quantity of rock to be removed. A is the larger chamber, containing 2,400 lbs. of gunpowder. c, the heading leading to it, which is 50 feet in length. B, the smaller chamber, containing 600 lbs. of powder. A x, the line of least resistance—50 feet. From A to the top of the cliff—165 feet.

Correspondents will oblige us by sending in their communications by Tuesday morning at latest.

PRINCIPAL CONTENTS.

Railway system	757
Draining of the lake of Haarlem	758
The Menai tubular bridge	759
Propelling on railways and canals	759
New plan of rails	760
Grand blast	760
Railroad to the Pacific	761
English iron trade	762
Railroad improvements	763
The Magnetic telegraph	763
Explosive cotton	763
Cleveland railroad	763
The iron trade	764
Railway-traffic returns	764

AMERICAN RAILROAD JOURNAL.

Published by D. K. MINOR, 105 Chestnut St., Philadelphia.

Saturday, November 29, 1846.

ENGINEER'S OFFICE PHILA. WIL. & BAL. T. R. R. }
Wilmington, Del., November 18, 1846.

PROPOSALS ARE INVITED FOR THE manufacture and delivery in Wilmington, of One Thousand Tons of Rails—to be made of the best iron used for rails, i. e., combining stiffness and toughness—and rolled so as to be perfectly sound, and exempt from flaws and liability to split at ends or intermediate points, or to crush or "spawl off," on the top surface.

Credits from delivery of six, nine, and twelve months—or discount of six per cent. for cash. Iron for wrought iron fastenings at ends to be included in the price of rails, viz: bars about $2 \times \frac{1}{4}$ inch and $\frac{1}{2}$ round iron, of best quality, for bolts.

Special contracts to be made on bills being accepted—rails of T form, about 62 lbs. per yard, and in lengths as follows:

80 per cent. of the whole	20 feet.
10 " " "	18 "
5 " " "	16 "
5 " " "	14 to 15 feet.

The inferior lengths are allowed, to work up such bars as may be defective at ends. Rails, etc., to be subject to inspection.

Proposals to be sent to the undersigned on or before the 10th day of December next.

J. R. TRIMBLE,
Engineer and Superintendent.

418
Addison Gilmore, Esq., having resigned the office of treasurer of the Old Colony railroad, the directors made choice on the 2nd inst., of Uriel Crocker, Esq.

For the American Railroad Journal.

U. S. Hotel, Boston, Nov. 14th, 1846.

MY DEAR SIR: Knowing that you are desirous to obtain early intelligence in relation to improvements in railroad machinery, I avail myself of the present opportunity to examine and speak of the cars and locomotive engines built in the immediate vicinity of Boston.

I have often heard of the car establishment of Davenport and Bridges, of Cambridgeport, and made a short visit yesterday, that I might see for myself what they are doing. On my arrival at the place I found a variety of machinery in full operation, by which the various parts, as well the wood as the iron work, of a car are prepared. I then examined several cars which were in various stages of construction, and found their mode of putting their work together, well calculated to insure durability and economy in repairs. From the manner in which the sides are braced, stayed and covered on the inside, I am of opinion that there can be no sagging in the centre.

I saw several beautiful cars just completed, and ready for shipment to Havana, for one of the Cuba roads. They are fitted up with cane bottoms and backs to the seats, and are otherwise prepared for a hot climate, by having the windows fitted to drop down, so as to allow a much larger opening than is usual. The greatest recommendation however, of these cars, is to be found in their ease of motion on the road when under rapid way. This great advantage to the road as well as comfort to the passenger, is to be attributed to the peculiar construction of the truck, and manner in which it is connected to the body, which allows the body to move sideways without carrying the truck with it. I am told that several of these cars have been introduced on the Eastern road, and that there are two of them on the Boston and Concord, N. H., road, where they are highly approved. Would it not be well for the interest of other railroads to introduce these cars into general use? It would certainly be for the comfort of those who use them.

When I commenced this letter, I intended to refer also to the locomotive manufactory of Messrs. Hinckley and Drury, who have turned out some of the best locomotives built in this country, but find that I must defer it until another opportunity—and am sir very truly yours,
H. C.

For the American Railroad Journal.

Railroad to the Pacific.

The adjustment of the Oregon question, the continued movement of emigrants towards the Western ocean, the conquest of California, and the prospect that the northern provinces of Mexico may eventually form part of the Union, lend new importance to the idea of a railroad between the Atlantic and the Pacific. The favor with which the plan of Mr. Whitney has been received in various sections of the Union, as well as at Washington, clearly indicate that some line will, ere long, be commenced, but the question remains, what route between the two oceans will be the most useful and beneficial.

Bold and comprehensive as is the plan of Mr. Whitney, some serious objections to it occur at the outset.

The first is the great length of the line from the Mississippi to the Pacific, by the route he proposes, the air line is at least 1,600 miles, and by any course feasible for a railroad must exceed 2,000 miles, while the entire distance between the Atlantic and the Pacific will exceed 3,000 miles.

The lowest charge at which goods are transported on our best railroads is \$1 50 per ton a hundred

miles, the average charge is much higher, but assume the lowest rate and the freight by railroad from the Pacific to the Atlantic, on a low estimate of distance, will amount to \$45 per ton.

How would such a charge operate on the trade of the Atlantic coast, and Europe with China?—Would it not be almost prohibitory?

A transshipment must be made on the Pacific—a further charge of at least \$15 per ton must be made, between China and Oregon, and the aggregate of \$60 per ton would be more than double the actual charge on the present route by water.

This necessary consequence would follow, that the commerce would be confined to the limited number of costly articles, like silk, specie, and valuable drugs, the saving insurance on whose value would counterbalance the excess of railroad freight. Passengers would doubtless avail of this direction, a few costly teas, a moderate amount of dry goods might occasionally be sent, but the great bulk of articles would still make the circuit of the cape of Good Hope.

Great as has been the progress of railway improvement it cannot yet compete with the flowing sheet and glancing keel on the open sea, for a great distance.

Compare the freight between Boston and Liverpool, a distance of 3,000 miles, with the lowest rates by railroad; while on the first route the average charge does not exceed \$6 per ton, or one-fifth of a dollar per ton for each hundred miles, the lowest rates by railway are at least seven fold that amount.

Or glance for a moment at the ocean steamers, between the Old and New World, and compare the few hundred tons of costly merchandize which they convey, at rates not materially varying from those of railways, viz: £7 to £10 per ton, (measurement ton), with the millions of bales of cotton, barrels of flour, bushels of wheat, corn and rye, and the vast masses of tobacco, iron, salt, and general merchandize impelled by sails across the Atlantic.

If we cannot secure the patronage of American merchants to this route, how are we to attract that of Europe, or make it, as has been suggested, the great thoroughfare between Europe and China. The European merchant must add to the \$60, to which we have adverted, the further charge of \$6 by ship, or £7 to £10 by steamer, and the aggregate must be so disproportioned to the current rates by ship between Europe and China, as to deter him from any considerable patronage.

The object of government in constructing or aiding in the construction of a great highway, should doubtless be to accommodate the great masses of merchandize, and its preference must be accorded to such a route as shall secure such important advantages, and if there be a superior route, which can make the ports it unites, like ancient Tyre, Alexandria, Constantinople and Venice, the points of deposit of the commerce between Europe and the Oriental regions, that route must command the preference.

A second objection to the route of Mr. Whitney is, the fact that it passes, for 2,000 miles, through a wilderness, and cannot for many years build up a remunerating local traffic. The lines in this country which transport at low rates are enabled to do so by a large local business; but this long line must for years be denied this advantage, and thus be crippled in its power to transport merchandize at low rates, and unless extended from the Mississippi to the Atlantic, must be dependent for its connection with the eastern coast, on a combined

system of canals, railroads, and lakes and river navigation, interrupted often by ice or drought.

A third objection to the Whitney enterprise is, the vast capital it must absorb. For such an enterprise, including bridges and viaducts, cars and engines \$30,000 a mile, or ninety to a hundred millions, is a moderate estimate; and whether paid for in lands or money, the absorption of capital to such an extent is a matter of serious moment, if a cheaper route can be presented. I will not say such sum alone should deter a great nation from a great object, but it is not to be disregarded in a new country where capital has not yet accumulated, and has still so much to accomplish.

A superior route from the Atlantic to the Pacific, follows as near as may be, the tropic of Cancer across the continent. This line protracted, sweeps by the southern capes of the two great peninsulas Florida and California, and crosses the American continent at a point where it is less than 480 miles in width; a distance just adequate to surmount the table land by a railroad with moderate grades.

The tropic of Cancer passes nearly over the Havana, strikes the coast of Mexico a little to the north of Tampico, crosses the northern provinces between Zacatecas, Chihuahua, thence nearly over Mazatlan, a sea port on the Pacific much resorted to by our ships of war, thence passes over the Sandwich Islands, the great resort of our whale ships, and proceeding westward between Manilla and the Japan islands, strikes China close to its principal entrepot, the great city of Canton. The route would be nearly direct from New Orleans to Canton.

Assuming that the length of a railroad would exceed the air line twenty-five per cent. the whole length of the proposed line would not exceed 600 miles; and assuming the same cost per mile allowed for Whitney's road, or \$30,000, the entire cost would not exceed \$18,000,000, or less than one-fifth the cost of the Whitney railroad.

The charge for freight at the rate conceded to the Whitney railroad, would be \$9 per ton. Assuming an average freight from New Orleans to the eastern terminus of \$2.50 per ton, and a freight of \$16 per ton from Mazatlan to Canton, and we have an aggregate freight of \$27.50 per ton from New Orleans to Canton in place of \$60 by the Whitney road, from the Atlantic coast to Canton. The average freight between New Orleans and Europe does not materially vary from \$10 per ton; outward it is more, and inward materially less, as ships often return in ballast. If we add this to the \$27.50, we have an aggregate of \$37.50 between China and Europe.

At this rate a large portion of the trade between Europe and China, California, Oregon and Peru, induced by the saving of time and insurance, must eventually take this course, while the major part of the commerce between the United States, the British Provinces, West Indies, and South America on the one side, and China, Manilla, Chili, Peru, California, and Oregon must fall into this channel.—By the route proposed, a passenger taking steam at New Orleans, may in four days reach Tampico or New Santander, in two more Mazatlan and by steam packets, Canton in thirty-four more, in all forty days. Starting from St. Louis, the future centre of the west, four days carries him to New Orleans.—And before the proposed line can be finished the completion of a chain of railroads must bring Boston the gateway to Europe, within five and perhaps four days of New Orleans.

From Mazatlan to San Francisco a line of steam packets may convey a passenger in 5 days, so that

the weary emigrant, who is now from May to October, on his journey to California, may in fifteen days from St. Louis, reach the land of promise.

Another effect of the line would be an easy access to Chihuahua and Zacatecas, reputed to be the richest mining districts of Mexico and open an inlet for our manufactures into the heart of Mexico itself, by the great inland road, along the table land from Monterey to Mexico, a connection which would doubtless, repay us for all the expenses of the present war.

Another advantage, common however, to both lines would be secured. American ships now excluded from the direct trade between China and most countries in Europe, could transport goods between China and the western terminus of the railroad, and thus command a vast freighting business.

The route suggested might commence either at Tampico, Santander, or Brazos, Santiago, as the face of the country should prove most inviting, or the greatest facilities exist for forming a good harbor, and in case the country south of Chihuahua should in the settlement with Mexico, be released to that country, a route a little longer, but possessing most of the advantages of that proposed, might be opened from Corpus Christi or Aransas to Guaymas one of the most eligible ports on the Pacific.

In addition to this, if the railroad of Mr. Whitney can be built with the proceeds from the contiguous land, the territory on the borders of this route may be made to contribute to the cost without impairing the fund flowing from our public sales.

But it may be urged that a more southern route might be adopted, crossing the isthmus of Darien by a shorter passage. Granted, but this line lies 1,500 miles to the south of the direct route from Cape Florida to Canton, and vessels bound from the ports of the Union to Canton or California, must if this line be taken, sail an extra distance of several thousand miles, and make the transit at a port almost beneath the line, and nearly 2,000 miles distant from the southern border of the Union. These are serious drawbacks, and must have weight in deciding this question.

But it may be urged that the route proposed, is through Mexico, and not through land of the United States. Granted, but for this reason it now demands the consideration of the public.

Nearly all the country in question is now in our possession. Large claims exist against Mexico, which she cannot liquidate, except by land.

The country is thinly populated north of a line from Tampico to Mazatlan, less than 700,000 people exist, nearly half Indians, and retrograding in numbers.

The country is in great part adapted to the vine, to raising of cattle and sheep, abounds in mines and minerals, and will furnish a vast reservoir to absorb our increasing numbers and restless spirits. The acquisition of these provinces will give us a front on the Pacific equal to our front on the Atlantic, many noble ports of infinite value to our commerce, nurseries of seamen and of trade in peace, and safe harbors of refuge in war.

Our great rival, England, has ports and fortresses in every commanding position on the globe except the Pacific.

It has been her policy, both by wars, treaties and discoveries, to secure such salient points. In our wars and in our treaties with Mexico let it be the policy of the Union, as far as may be consistent with justice, to secure such positions and such territory as shall give us means for future development and improvement, which shall enable us by the mighty power of

steam, and the electric wire, to bind together the sinews of this great empire.

Welcome then will be peace, if millions have been expended, great objects will have been accomplished, and our armies beating their swords and bayonets into the spade, and the pitch may move onward in the path of improvement instead of blood, and rival the armies of Great Britain, France and Germany, who now, to the number of 200,000 are waging war on physical obstacles, whose steel glances upon the rock or buries itself in the earth, whose artillery echoes from the ledge, whose music, instead of the ear piercing fife and spirit stirring drum, is the shrill whistle of the locomotive. Before whom the mountains bow, and the vallies are exalted, in whose train art, science, and civilization are triumphant attendants.

E. H. DERBY.

English Iron Trade.

By the late arrivals we have our foreign journals to the 31st October, inclusive, from which we gather the following in relation to the iron trade.

The Mining Journal, of October 24th, says that "a fair business is doing in all descriptions. Scotch pigs gave way a little during the week, but have recovered, and holders ask rather better prices."

LONDON, OCTOBER 23, 1846.

	£.	s.	£.	s.	d.
Bar a Wales—ton	8	15	9	0	0
" London	0	0	10	0	0
Nail rods	0	0	10	15	0
Hoop (staf.)	11	5	11	10	0
Sheet	0	0	13	0	0
Bars	11	0	11	10	0
Welsh cold blast foundry pig	5	5	5	10	0
Scotch pig b Clyde	3	10	3	12	0
Rails, average	0	0	10	0	0
Russian, CCND c	0	0	0	0	0
" PSI	0	0	0	0	0
" Gourieff	0	0	0	0	0
" Archangel	0	0	13	10	0
Swedish d, on the spot	0	0	11	10	0
" Steel, fagt	0	0	16	0	0
" " kegs e	14	0	14	10	0

a, discount 2½ per cent.; b, net cash; c, discount 2½ per cent.; d, ditto; e, in kegs ½ and ¾ inch.

Notice to the Editor of the Mining Journal.

Glasgow Pig Iron Trade.—Sir: The market, since our last, has maintained its firmness. A large business has been done at price little varying from the quotations then given. Today the market is firmer, and the prices may be quoted 71s. for mixed Nos., and 72s. 6d. for No. 1. DOUGLAS & HILL, Metal Brokers. Glasgow, October 21.

The business of quarter day is now fairly brought to a close, and the prices at which iron is to be purchased for the ensuing quarter pretty well understood. We will, therefore, this week, endeavor to record them, as near as we are able, for the use of our own immediate district. That a greater amount of business has been transacted upon the like occasions, we do not wish to dispute—particularly at the closing meeting at Dudley, on Saturday evening; nor do we think this a circumstance at all indicating any unsatisfactory state of the market, accompanied as it was by the easy and satisfactory arrangement of all the transactions then entered into, but merely the result of a superabundance of orders previously upon the manufacturers' books, and a legitimate caution on the part of those who are fondly anticipating higher prices. From the most accurate information to which we have access, the best cold blast melting pigs No. 1 are realizing upon an average £5 15s.,

and are exceedingly scarce in the market—as are No. 2 of the same description at 5s. less. The same quality of pigs for forge purposes may also be quoted at £5 5s. on the average. This article is growing quite antiquated, and bids fair shortly to become a thing of by-gone times, while it is being superseded by the produce of furnaces where one or more hot air tuyeres are introduced, and which is now fetching about £5 per ton. As for the hot air, raw coal, north Staffordshire mine, and cinder pigs they take their appropriate gradations in the downward scale—the lowest price at which we have heard of a sale of this amalgamation metal being £4 3s. 4d. In manufactured iron we still find merchant bars have been bought a shade under £10., as also rails, which, being generally purchased in large quantities, bear a lower proportionate price than other sorts of iron. Hoops at about £11 10s., and sheets and plates from £12 to £13; and lastly, nail rods, to which formerly a very considerable portion of the iron manufacturer in this district was appropriated, will be found to average £9 15s. Considerable parcels of these are yet in the hands of speculators, but the warehouses of the nail masters are far from that state which would, by medical men, be designated repletion. The same remark will also apply to most other descriptions of iron and steel, the stocks in the hands of the manufacturers of hardware articles of every description being very light.

The reports of October 30th are not quite as favorable, rails being quoted at £9 10 and £9 15 per ton—other kinds remaining about the same as last week's quotations, with a moderate demand.

Railroad Improvements.

Under this caption, we notice in an eastern paper that the parties interested in the charter for a railroad from the New Hampshire line to Portland, [Me.,] and connecting with the Boston and Maine, road, have made arrangements for the survey of a route. The survey was to be commenced yesterday, by Jas. Hall, Esq., late of this city, beginning at the village of Great Falls, thence to continue through or near the villages of Sandford, Alfred and Gorham to Portland.

The Portland Advertiser says they are informed also, that early proceedings are contemplated under the charter of the Kennebec and Androscoggin road. This important route, extending from near Lewiston to Waterville, will command great attention, when its position and relations are fully understood. We published a notice of a meeting of the corporations a short time since, and we learn that active measures are in progress along the line to secure subscriptions to the stock, preliminary to an organization. From the spirit manifested by those immediately concerned, great confidence is felt that the present efforts will be successful.

"An editorial in the Bath Tribune," says the Advertiser, "notices some former remarks of ours, in relation to this Lewiston road, and enters into a comparison showing the superior necessity and importance of a railroad for the river towns, as they are called.

"We have no intention, and never had, to deny that the populous towns on the Kennebec river, are entitled to seek a railroad communication westward. We contemplate no such thing as the separation of those towns from the benefit of a proper railroad system, as the Tribune will perceive, by reference to the article on which it comments.—But we indicated methods by which Gardiner and

Bath might enjoy the benefit of railroad to Portland and Boston, without the heavy and utterly unproductive expenditure necessary to build the 20 miles of road between those two places. We are convinced that this is a point which needs more attention in some quarters. All must admit, that steamboat competition will be a heavy drawback upon the energies of Bath, Gardiner, and the neighboring towns, in whatever attempts they make to construct railroads, and why they should exhaust any part of their resources in the unnecessary and unprofitable outlay upon the margin of the river between Bath and Gardiner, is a point that has not yet been demonstrated."

The Magnetic Telegraph.

HON. AMOS KENDALL publishes a letter in the Washington papers, giving the following in reference to the telegraph. He says that:

"Lines are now in operation from this point to Washington, Buffalo and Boston; making an aggregate, as the wires run, of about 1,030 miles. The result of the late election in Buffalo was known here before it was ascertained from a single ward in this city and was published the next morning in Boston and Philadelphia, and at Washington that evening.

"The conviction is now general, that the telegraph must have stronger conductors than copper wires; and the Washington and Boston companies are preparing to cover their lines with iron. An iron cord has been up during the season, from Philadelphia to Baltimore, and with far superior strength is found in every other respect to answer the purpose as well as copper.

"Lines have been built from Boston to Lowell; from Troy to Saratoga; from Syracuse to Oswego; from Auburn to Ithaca, which is progressing to Elmira; from Buffalo to Lockport, which is to be extended to Lewiston, to be connected across the Niagara, with a line to Toronto; from Philadelphia to Harrisburg, to be extended to the west. This is covered with a beautiful cord. The length of the lines now constructed, is about 1,300 miles.

"A line is in progress from Boston to Portland.—Preliminary steps have been taken for the construction of a line from Buffalo to Detroit, and thence through Chicago to Milwaukee, a distance of about 800 miles, to be finished in 15 months. The New York and Washington company having obtained the right of way along the railroads through New Jersey, are rebuilding their line on the direct route, and expect in two months to have up two good iron wires from New York to Baltimore.

"A line will be immediately put up from Washington to Petersburg, Va., if there be no difficulty about the right of way; and none is apprehended.—An effort will be made immediately to raise the necessary funds to carry the southern line through to New Orleans next season.

"To us who know the capabilities of this invention, it is strange that the government has not seized hold of it as a most powerful auxiliary in the war with Mexico. I do not hesitate to say that, by a line to New Orleans, not costing more than two hundred thousand dollars, more than one million of dollars could have been saved since this war broke out, and greater activity given to many of its operations.—The armistice of Monterey could have been shortened two weeks or more; and within that time, in all probability, Saltillo captured, and progress made towards peace. And when peace comes, how many lives may be saved by gaining a week in communicating the intelligence to the army and navy!

"The people of the west are becoming zealous in favor of the telegraph, and another season will not pass before it will reach Cincinnati, and be on its way to St. Louis. A line from New Orleans to connect with this at Louisville, and a line to connect both with the lake telegraph, will be very valuable, and will complete the main sinews of the system of telegraph for these United States.

"With high consideration, your obedient servant,
"AMOS KENDALL."

Explosive Cotton.

A good deal has been said of a "recently discovered invention" in the shape of "gun-cotton," or "cotton gunpowder." The Washington Union of a late

date, says that "experiments have been made at the arsenal in this city, this morning, with the 'ballistic pendulum,' in presence of the intelligent officers of that institution, the secretary of war and some of his officers, and some of the officers of the army, under the auspices of Col. Talcott."

As exchange informs us that Mr. Robertson, the American consul at Bremen, who returned to this city in the Britannia, and has just arrived at Washington, has, "brought out a sealed packet from Prof. Schonbein, with an admonition that it was to be opened only in the presence of the president of the United States. It contained some specimens of the gun or prepared cotton, with hints about the mode of preparing it. The discovery gains additional confidence throughout Europe."

The N. Y. Courier and Enquirer has the following, in relation to the matter.

"The discovery is claimed by several scientific men abroad, though it was introduced to the British association, by Prof. Schonbein, 'gun cotton.' This is a substitute for common gunpowder, which is composed of 75 parts of nitre, 15 of charcoal, and 10 of sulphur; the latter ignites and fires the charcoal, which generates heat sufficient to turn the nitre [or saltpetre,] into gas, many thousand times its own bulk, thus exerting a prodigious explosive force.—The only use of the sulphur is to convey the flame through the mass; the gas, or explosive force, coming entirely from the heated nitre. Common cotton is nothing more than wood in an excessively minute fibrous state, and dipping this substance into nitrous acid, the acid converts it instantly into charcoal, which, after frequent immersion the acid is withdrawn and the charcoal remains strongly impregnated with nitre. This then, is genuine gunpowder of the best kind, for the fibres are so minute and regular that the flame once applied, passes immediately through them, which is all that is wanted, and which is the great desideratum in common powder, the aim being to get the grains round in form and of the same size, the sulphur being mingled merely to convey the flame all through the different parts. This sulphur is not needed with the cotton, as the fibres are so uniform and the saturation of the nitre so perfect, that flame when once applied is disseminated in an instant, and gas is engendered of immense explosive power."

A letter in the Boston Courier thus accounts for this "mysterious invention."

"The preparation is said to be much stronger than powder, and possess the great advantage of not soiling the gun barrel. Prof. Otto, of Brunswick, has disclosed the mystery; saying that as soon as he heard of it, he went to experimenting, and having succeeded in his researches, he publishes the results immediately, in detestation of a scientific man, who would make science venal. All that is necessary is to soak the cotton in fuming nitric acid; then wash all the acid off by rinsing the cotton two or three times in water, and dry it. This is all. The cotton becomes as explosive as gunpowder, and if fine and well prepared, it will explode by being struck with a hammer upon an anvil."

Cleveland Railroad.

We understand that a committee have arrived in Baltimore from Cleveland, for the purpose of opening the books for subscription to the stock of the Cleveland and Pittsburgh road. The Gazette, in an article, enumerating the advantages which must accrue from the establishment of this route, holds the following language:—

"We wish to call the attention of our Baltimore friends to the cheering prospects which this road opens up to them when they shall have, with us, carried the Connellsville road to a completion, and shall have united by this means, the waters of the Chesapeake with those of the Ohio.

"This Pittsburgh and Cleveland road passes through Columbiana county, Ohio, within about 43 miles of Wooster, which is on the route of the great Cincinnati, Columbus, and Cleveland railroad passing through the centre and richest part of Ohio. When these contemplated roads are finished, there-

fore, (the Connellsville, the Pittsburgh and Cleveland, and the Cincinnati,) it only needs this 43 miles of railroad, passing through Canton and Massillon, and a splendid wheat country, to complete a continuous route of railroad communication between Baltimore and Cincinnati, passing through one of the richest agricultural regions in the world; and communicating with all the great improvements of the Ohio.

"What a glorious prospect this holds out to Baltimore and Philadelphia! It secures to them at one stroke, what New York and Boston have been laboring for for years, and by an almost direct line. It opens up to them the whole lake country, the interior of Ohio and Indiana, and the whole country washed by our great western rivers; and it secures to them the exclusive trade of these immense and fertile regions during part of the fall and spring months.

"Having those splendid prospects in view, we hope our Baltimore friends will lose no time in urging forward the Connellsville road. It ought to be located and put under contract without one moment's delay, and as much depends on the co-operation of the directors of the Baltimore road, we rely on their well known shrewdness and enterprise, to lead them to embrace the cheering prospects before them, and to let no further time be lost.

"The surveys on the Pittsburgh and Connellsville railroad are proceeding with commendable energy. Two companies of engineers are on the route. Two routes from this city to Turtle creek have been surveyed, and the estimates of costs and advantages and disadvantages of each, will soon be presented for the consideration of the board. From Turtle creek to McKeesport, the road, it is expected, will be located and ready for letting by the middle of this month. East of McKeesport the surveys are proceeding with spirit."

The Iron Trade.

In the Pittsburgh Gazette, of a late date, we find the following article, containing some facts in reference to the iron trade, which will be interesting at this time.

"There appears to be," says the Gazette, "a good deal of prejudice against Mercer county pig metal in this market. The fact of part of it being manufactured with raw coal, rendered the iron masters cautious in the first place, and the difficulty of ascertaining which of it is charcoal pig, adds to their indifference about touching it. The process of refining iron from the ore with pure coal, is yet to some extent an experiment—we mean that it has not yet attained such perfection as to establish the quality and reputation of the metal as good. It is to be expected that the make of a furnace blown with coal, will vary somewhat until uniformity is attained by better acquaintance with the constituents of the coal and ore, and the practical result of the reduction of one with the other. And, because the experiment has not been thus far successful, we see no reason to doubt but that, in time, a comparatively superior quality of metal will be produced. As our iron masters become more familiar with its working qualities, and its aptitude for mixing, they will doubtless regard it much more favorably, and the consequence will be an appreciation of its value.—It is better for the reputation of the metal that it should be known as coal or charcoal pig, as the case may be, because, if some parcels turn out badly, it is all confounded together, and the reputation of the whole suffers.

"The reputation of the Mahoning (O.) county metal has been good from the first. This is a foundry pig, very suitable for light and highly finished castings. This furnace is blown with raw coal. Fully 200 tons of the pig has been sold in this market since first introduced, at \$30, an average of 6 mos.

"A lot of 22 tons from the furnace of Levis, Vinton, Reese & Co., Summit county, O., arrived in this city, some weeks ago, consigned to owner, but we have not been able to ascertain anything further about it, nor could we find the owner at the time. This furnace, said to be the largest west of the mountains, is blown with raw coal."

Here follows a table showing the date of receipts, the quality and quantity, and the disposition of each lot of "Hanging Rock" metal, for some weeks back,

giving total received 1603 tons. There were in store, previous to this date, 600 tons of h. b. metal, and the accounts stands as follows:—

In store of... h. b.	600 tons.
Received of... h. b.	926 " 1526 tons.
" " c. h.	737 "
Total available stock to date,	2263 "
Deduct sales to date—from store. . .	100
" wharf. 1204 1304 "	

Total stock on hand unsold 959

"This is sufficiently near the exact amount to answer all practical purposes.

"The consumption by our foundries is set down at an average of 44 tons per day the year round, or a total of 13,200 tons per annum. This is a moderate estimate, as at some periods the consumption runs up to near 100 tons per day.

Set the consumption of the foundries down at. 12,000 tons.

The twelve rolling mills and the two forges consume 900 tons per week. Say they run only 40 weeks in the year, and we have. 36,000 "

Total per annum 48,000

"In a former paper we gave the consumption of blooms and pig metal, in round numbers, at 40,000 tons. After making all allowances for a stoppage of three months each year by the rolling mills, which is more than they do, we can easily see that the first statement was actually under the mark. And if we add to the product of our own mills and foundries, the iron and nails sent here for a market, it will be found that upwards of 45,000 tons of iron and fabrics are marketed at Pittsburgh in the course of twelve months. We do not say, nor suppose, that 45,000 tons of iron in the shape of pig metal and blooms are worked up here per annum; but we do say, that computing by the known ordinary consumption of mills and foundries, it is conclusively shown that 40,000 tons is a moderate estimate, after making very large allowance for loss of time in the manufacturing, etc., and that, in all, upwards of 45,000 tons change hands through the instrumentality of Pittsburgh capital, in the course of a year. If we were to embrace the mills in the neighborhood of this city owned and run by Pittsburghers, the total would overrun this large amount.

"Railroad iron—Messrs. Caruthers, Millep. & Co., at the Kensington iron works, are making 200 tons of railroad iron for the Madison and Indianapolis road. It is the flat bar, cut at each end, so as to dove-tail together, and punched in such a way as to sink the heads of the spikes. The bars about 10 feet long, are certainly superior to any rails yet manufactured in the west, both for quality of the iron and superior finish. We think the palm may be awarded to them without any disparagement to others, as great care has been taken in their manufacture. The price is \$61 per ton.

"The owners of the various furnaces in Hanging Rock are about building a railroad six or seven miles in length, for more convenient access to the river. It will require 200 tons of rails, which are to be rolled in this city. This road may possibly be extended further into the county, and serve to transport produce to the river for shipment to this city.

"The St. Louis papers of the 30th, notice the receipt of 4 tons of pig metal from the furnace of Harrison & Co., at the iron mountain. It was brought up as a sample to be tested in one of the foundries there. It is pronounced in advance of trial, a 'superior' article."

Railway Traffic Returns.

There appears to be a regular increase in the railway traffic of Great Britain, of about £20,000 a week over corresponding weeks of last year, as will be seen by the following, which is the last report received.

"From these returns, it will be seen, that the amount of traffic for the last week, on nearly 2,760 miles of railway, was £162,797, thus accounted for—£89,651 for conveyance of passengers only, £40,093 for the carriage of goods, and a remainder of

£23,053 for passengers and goods together, not respectively apportioned; being an increase over the corresponding week of last year of £21,349."

STATISTICS OF FRENCH RAILWAYS.

The following article in relation to railways, in France, which we find in Herapath's Journal, for October 24th, will be read with interest in this country. It shows that in France, as well as in this country, and in Great Britain, the railway interest is progressing rapidly.

Lines in Operation.—Auxdrezieux and Roanne, Bordeaux and Teste, Grand Combe, Montpellier and Nîmes, Montpellier and Cette, Moulhouse and Thann, Paris and Orleans, Paris and Rouen, Paris and St. Germain, Paris and Versailles (Right and Left Bank), St. Etienne and Lyons, Strasbourg and Basle, Paris and Sceaux; total 14 lines, out of which only three exceed the length of 100 kilometres (62 English miles); total length, 841 kilometres (523 miles); total expense, 303,800,000*fr.*, viz: Paid up capital 184,500,000*fr.* Borrowed 59,700,000 Lent by the state 45,600,000 Grant for works 14,000,000

Total (£12,152,000) .. 303,800,000*fr.* Cost per mile, £23,235.

Three of these lines neither pay interest nor dividend; two give less than 2 per cent., one gives 3½ per cent., and the others from 7½ to 10 per cent., redemption money deducted.

Lines in partial operation.—The Northern and the Orleans and Bordeaux lines are in partial operation extending a distance of about 450 kilometres (280 miles). The shareholders have paid up for these two undertakings 65,500,000*fr.*; the surplus has been paid by the state, either in the shape of a supply to the Bordeaux line, or as a loan to the Northern line. The total cost for the two lines, extending a distance of 1,082 kilometres (673 miles) with the branches, is estimated as follows:

Share capital 245,000,000*fr.* Subscription by the state for works 70,000,000

Total (£12,600,000) .. 315,000,000*fr.* Estimated cost per mile, £18,722.

These, with the preceding lines, make a total length in operation of 803 miles.

Lines about to be opened.—Avignon and Marseilles, Amiens and Boulogne, Central (Vierzon, Chateauroux, and Nevers), Rouen and Havre. Total length 565 kilometres (351 miles), the greater portion of which will be open in a few months, and the rest by the end of next year. The lines will cost 209,500,000*fr.*, namely:—

Share capital 109,500,000*fr.* Loans 10,000,000 Borrowed from the state 10,000,000 Subscription in money from do. 45,000,000 Subscription for works from do. 35,000,000

Total (£8,380,000) .. 209,000,000*fr.* Cost per mile, £29,200.

Lines in course of construction.—Dieppe and Fecamp, Eastern (Strasbourg, Fampoux and Hazebrouck, Montereau and Troyes, Paris and Lyons, Tours and Nantes, comprising together a length of 1,540 kilometres (958 miles). Estimated expense:—

Share capital 419,000,000*fr.* Subscription for works by the state 124,000,000

Total (£21,720,000) .. 543,000,000*fr.* Estimated cost per mile, £22,672.

Lines conceded in 1846.—Five have been granted during the present year. The Aix Branch, Bordeaux and Cette, Castres Branch, Western, Lyons and Avignon, Grenoble Branch, Paris and Caen.—Aggregate length, 1,673 kilometres (1,040 miles). Of four of the above grants, there are some formalities to be completed. The total expense is estimated thus:—

Share capital 490,000,000*fr.* Loan 8,000,000 Subscription in money by the state 15,000,000 Subscription in works by do. 65,000,000

Total [£3,120,000] .. 578,000,000*fr.* Estimated cost per mile, £22,230.

Concessions authorised, but not completed.—Four grants authorised in 1845 and 1846, remain to be completed: Corbeil and Melun, Dijon and Mulhouse, Auxonne Branch, Montbeillard Branch, Dole and Salins, St. Dizier and Gray. Total length 476 kilometres (295 miles.) It is estimated that the state will contribute 20,000,000*fr.* towards the completion of each of the two principal lines. The capital is intended to be supplied as follows:—

Share capital.....108,000,000*fr.*
Subscription in money by the state. 20,000,000
Subscription in works by do. 20,000,000
Total.....(£5,920,000).....148,000,000*fr.*
Estimated cost per mile £20,000.

Concessions to be made.—The central sections of Chateauroux to Limoges, from Bec d'Allier to Clermont and Nevers branch. The Bordeaux and Bayonne, with branches. These are likely to be granted in 1847. Aggregate length of both lines 520 kilometres (324 miles) will be carried into execution according to the conditions of the law of 1842; the expense is estimated as follows:—

Share capital.....70,000,000*fr.*
Subscription in works by the state. 82,900,000

Total.....[£6,116,000].....152,900,000*fr.*
Estimated cost per mile, £18,877.

The following is a synopsis of the preceding:—

	Length of Lines, English miles.	Estimated Expense.
Lines in operation.....	523.....	£12,152,000
“ partial operation. 673.....		12,600,000
“ shortly to be in operation.....	351.....	8,380,000
“ constructing.....	958.....	21,720,000
“ lately conceded.....	1,040.....	23,120,000
“ authorised to be conceded.....	296.....	5,920,000
“ not yet authorised	323.....	6,116,000

Total.....4,164.....£90,008,000
Estimated average cost per mile, £21,617.

Of the 90 millions above stated, the French government are to contribute £3,200,000 in money, and £16,436,000 in works; total, £19,636,000, as an inducement to carry out the great lines of railway communication in France, nearly the whole of which, by the contrivance of the government, will be gradually absorbed by the state in the course of 30 or 40 years.—*Journal des Chemin de Fer.*

“Mammoth Engines.”

In 1829 a locomotive engine weighing over five tons, was considered so much of a “mammoth,” that it was not allowed to compete for the prize, but now it requires a 25 to a 36 ton engine to be called a *mammoth*! as will be seen by the following paragraph from the London Mining Journal.

“The Great Western company continue to turn out new engines even of more stupendous build than any before. A splendid one, the *Elk*, has just been slipped off the anvil, to be specially employed in the express train service. The *Elk* was designed by Mr. Brunel, under the superintendence of Mr. Gooch; her dimensions are—driving wheels 7 ft. diameter, stroke 18 in., cylinder 16 in., boiler 14 ft.; weight of engine, without water, 25 tons; weight of tender, without coke or water, 9 tons. Though the machine cannot be expected to be as yet in proper working order, she was attached to an express train with six carriages, and performed a distance of 77 miles, [from Swindon to Paddington,] in 1h. 20m. The down journey was not so rapid, having been 1h. and 31m. performing it. Besides the *Elk*, the following large locomotives are in working—the *Great Western*, diameter of driving wheels 8 ft., cylinder 18 in., stroke 24 in., boiler 16 ft.; weight of engine, without water, 36 tons; weight of tender, without fuel or water, 10 tons—making a total of 46 tons: this engine was built for passenger trains upon the same plan as the *Elk*. The *Prince* and the *Queen* engines are of the same dimensions, and are also for passenger trains. The *Bellerophon* and the *Previer* are luggage engines, having 6 wheels of 5 ft. in diameter, connected; the dimensions in other respects, and their respective weights, being similar to the *Great Western* passenger engine. These luggage engines are decidedly the most powerful, and surpass in power and speed the *Hercules*, which impel-

led a train weighing 406 tons, in the experimental trip with the gauge commissioners.”

Will some one tell us what will in the year 1866, constitute a “mammoth engine?”

Miscellaneous Items.

East Shore Railroad.—The Hampshire Gazette informs us that the Hampshire and Franklin railroad company, and the Mount Holyoke railroad company have severally voted to accept their charters, and have been organized, the former by the choice of John Leland and Chas. Adams, of Amherst, Horace Henderson, of Sunderland, John S. Ward, of Montague, and Sam'l Powers, of Hadley, directors; Hon. John Leland, president, and John S. Adams, clerk and treasurer; the latter by the choice of Wm. Bowdoin, Alonzo Bardwell, Erastus T. Smith, Moses Montague, and Hiram Smith, all of South Hadley, directors; Hon. Wm. Bowdoin, president, and E. G. Bowdoin, Esq., clerk.

Meetings of the two corporations are to be held on Wednesday, the 4th of November, to act upon a proposition to unite the two companies under the name of the Hampshire and Franklin railroad company, according to the provisions of the charter of the Mount Holyoke company. The Amherst Express says, that A. F. Edwards, of Fitchburg, engineer of the Vermont and Massachusetts railroad has been appointed engineer, and explorations and surveys, preparatory to a location of the road, will be commenced this week.

Souhegan Railroad.—The Concord Patriot states that the “Concord, [N. H.] railroad corporation has indefinitely postponed the consideration of assuming the construction of the Souhegan railroad. The subject has created a good deal of excitement among the stockholders, and 17,000 out of 20,000 shares were represented on the occasion. The majority for indefinite postponement was 1,726. The Concord road has been one of the most successful enterprises of the kind that was ever established in this country. It divides 10 per cent. annually, and its shares readily command over 30 per cent. premium in the market. The gross earnings last year were \$228,479; expenses \$135,050—leaving \$73,429 net, out of which, two dividends, of 5 per cent. each, were paid on 16,000 shares, the par value being \$50 each, and \$13,424 added to the contingent fund. The second track laid down by the Nashua and Lowell railroad, the past year, has greatly facilitated the business of the line, which has induced the directors of the Concord road to construct a continuation of it between Nashville and Manchester, and for this purpose 4,000 new shares have been created and taken by the stockholders, the premium upon which has been an extra dividend in effect.

Cheshire Railroad.—The work on the Cheshire railroad, we are happy to hear, is being pushed forward with a strong force. A large number of hands are at work on the summit cutting beyond Keene and at other difficult points. It will be a magnificent enterprise when completed, and will afford to the traveller, from the elevation of various portions of the road, some of the most picturesque and beautiful views in the country.

Vermont Central Railroad.—The work on the Central railroad, we hear, is progressing in the most satisfactory manner, under the personal superintendence of Gen. Belknap. Those wonderful machines the steam excavators, are still at work in the great cut at the Hour Glass, in Windsor, and will get through in about four weeks. The masonry on the line is also in progress, and the grading between Montpelier and Burlington, now under the immediate charge of Mr. Belknap, is also going on favorably.

Phoenixville Rolling Mill.—The extensive rolling mill belonging to Messrs. Reeves, Buck & Co., at Phoenixville, Chester county, is almost completed and will go into operation in a few days. This rolling mill is intended for the manufacture of railroad iron, and is one of the largest in the country. It will produce about 9,000 tons per annum.—*Miner's Journal.*

The Bangor Gazette says the progress of the Atlantic and St. Lawrence railroad has awakened the attention of the people in the interior and seaboard west of the Kennebec to carry forward the project

for the routes, one from Portland to Augusta, the other from Lewiston to Waterville. This latter is an important and feasible plan, as it connects with the Atlantic and St. Lawrence, runs through fine interior towns, on an easy grade, and aims directly for this city by the best and directest line. From Waterville to Bangor the track was surveyed years ago and was found to be not only feasible, but one of the most practicable ever surveyed. Very little excavating or raising is necessary in the whole distance.

Railroad Election.—An election for directors of the Mad river and lake Erie railroad company was held at Bellefontaine on the 19th inst., which resulted in the choice of the following gentlemen:

Sam'l Keener, Erastus Sheldon, Champaign; F. M. Follett, D. C. Henderson, Erie; S. G. Harkness, Huron; R. W. Shawan, Seneca; S. M. McConnell, Hardin; R. E. Runkle, Logan; Wm. Hunt, Clark county.

Appointed by the governor.—Samson Mason, Clark; Elutherus Cooke, Erie; Moses B. Corwin, Champaign county.

Wm. Hunt, of Clark county, was unanimously elected president of the board.

We understand that the road will be finished to Urbana by the opening of navigation in the spring. The work north of Bellefontaine has been somewhat retarded, in consequence of the ability of the company to bring down the iron, as it requires the entire locomotive force of the company to carry off the produce along the line and bring down the freight from the lake.—*Urbana Citizen.*

New York and New Haven Railroad.—The Journal of Commerce furnishes the following gratifying intelligence relative to the contemplated railroad between New York and New Haven.

We are most happy to announce that such a contract has actually been made, and \$1,900,000 of the stock taken without reserve, on condition that the remaining \$600,000 shall be subscribed within a specified period.

The terms of the contract require the entire work to be completed in one year from the 1st of January next. A shorter period would have been insisted on but for the physical necessity of occupying nearly or quite a year in the construction of the bridge over the Housatonic river.

New Haven, Hartford and Springfield Railway.—A large force is employed in rebuilding the bridge over the Connecticut river at Windsor locks; and the piers, which were uninjured by the storm, are already surmounted with the greater portion of the frame work. In a few weeks the cars will run without interruption over the whole line. At present passengers are transported through the canal around the Enfield falls, in the smart little steamer S. B. Stone; and in fine weather, the pleasant relief thus afforded to the monotony of the railway car, amply compensates the traveller for the trifling retardation incident to the change.

The business of this road is managed with a degree of promptness and despatch that might be imitated with advantage on some of the lines in our state.

An act to incorporate the Providence, Warren and Fall river railroad, has passed the Rhode Island legislature.

Little Schuylkill Railroad.—We are pleased to learn that the wooden track of this road is about being replaced with a heavy iron T rail. The contractor is Mr. Bernard Flynn, and the rails will be made at the new rolling mill of Messrs. Reeves, Buck & Co., at Phoenixville, which will be in operation in a few days. The coal trade from that quarter, which will reach nearly 100,000 tons this year, will be largely increased by substituting a good iron road for the present dilapidated concern.—*Pottsville Journal.*

Central Railroad.—The Buffalo Advertiser remarks that people abroad may form some idea of the amount of the business on the Central railroad, and of the amount of the produce exported from Michigan, the Detroit Advertiser states that there were brought to that city over the road, on Friday last, no less than 4,400 bbls. of flour, and wheat enough to make the amount 5,000 bbls. Each of the locomotives brought in a train of 50 cars, loaded down.

Improvements in Locomotive Engines.—Messrs. G. Stephenson and W. Howe's improvement in locomotive steam engines consists in the application of three steam cylinders to locomotive engines—two to be of the same diameter and capacity, and together to be equal in capacity to one large cylinder. The pistons of all the three cylinders are to move simultaneously in the same direction; the large cylinder is to be placed exactly in the longitudinal central line of the engine, and the other two cylinders on each side at equal distances from it. The piston of the centre cylinder is to drive a crank on the axle of the impelling wheels, and the pistons of the two smaller cylinders are to be connected with crank pins fixed on the naves of the driving wheels; the crank to be fixed at right angles to the crank pins. The intention of this arrangement is to neutralise any tendency that the oblique action of the connecting rods on their crank pins may have to produce a lateral vibration on the supporting springs of a locomotive when travelling very rapidly.—*Mining Jour.*

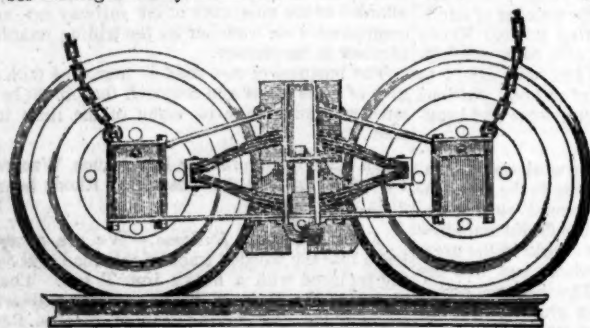
Canal and River Navigation.—A new method of propelling canal boats has been recently patented, which consists of a combination of steam power and warping. In the middle of a flat bottomed barge, with rudder at both ends, (Janus fashion,) there is placed a steam engine, which causes two rollers or drums, fixed in bearings at opposite ends of the vessel, to revolve; these are alternately employed to wind upon a wire rope, either laid at the bottom of the canal attached to moorings, or fixed to posts at the side. Experiments were recently made at the Maida hill tunnel, and were quite successful. The steam-tug drew at a speed of nearly 6 miles an hour several heavily laden barges, without causing any greater swell than that usually occasioned by the passage of a single barge. To all interested in canals, this discovery is of the utmost importance, since the extension of railroads threatens to render canals almost useless, it being impossible for animal power successfully to compete with steam, and the common steam-tug, with paddles, being unavailable for the purpose, on account of the great swell they cause destroying the banks.—*Mining Journal.*

RAILWAY IRON.—DAVIS, BROOKS & Co., No. 68 Broad Street, have now in port on Ship-board, 200 Tons of the best English heavy H Rails, 60 lbs. to the lineal yard, which they offer for sale on favorable terms, also, about 6 to 700 Tons now on the way, to arrive shortly, of the same description of Rail.

Nov. 16, 1846.

46th

RAY'S EQUALIZING RAILWAY TRUCK.—THE SUBSCRIBER having recently formed a business connection in the City of New



York, expressly for the manufacture of the newly patented and highly approved Railroad Truck of Mr. Fowler M. Ray, is ready to receive orders for building the same, from Railroad Companies and Car Builders in the United States, and elsewhere.

The above Truck has now been in use from one to two years on several roads a sufficient length of time to test its durability, and other good qualities, and to satisfy those who have used it, as may be seen by reference to the certificates which follow this notice.

There have been several improvements lately introduced upon the Truck, such as additional springs in the bolster of passenger cars, making them delightful riding cars—adapting it to tenders, trucks forward of the locomotive, and freight cars, which, with its original good qualities, make it in all respects the most desirable truck now offered to the public.

Orders for the above, will, for the present, be executed at the New York Screw Mill, corner 33d street and 3d avenue, (late P. Cooper's rolling mills) and at the Steam Engine Shop of T. F. Secor & Co., foot of 9th street, East

RAILROAD IRON.—100 TONS RAILROAD IRON [Bridge pattern] for sale low to close a consignment by

JOHN F. MACKIE,
189 Water street.

November 7th, 1846.

1m45

RAILROAD IRON.—1000 TONS HEAVY H Railroad Iron, 60 lbs. per lineal yard, expected to arrive within the next 30 days. Apply to

DAVIS, BROOKS & CO.,
68 Broad St.

October 9.

[1042]

TO LOCOMOTIVE AND MARINE ENGINE BOILER BUILDERS. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufacture and for sale by

MORRIS TASKER & MORRIS,

Warstouse S. E. corner 3d and Walnut Sts., Philadelphia

PATENT INDESTRUCTIBLE WATER PIPES. The subscribers continue to manufacture the above PIPES, of all the sizes and strength required for City or Country use, and would invite individuals or companies to examine its merits.—This pipe, unlike cast iron and lead, imparts neither color, oxide or taste, being formed of strongly riveted sheet iron, and evenly lined on the inside with hydraulic cement. While in the process of laying, it has a thick covering externally of the same—thus forming nature's own conduit of stone. The iron being thoroughly enclosed on both sides with cement, precludes the possibility of rust or decay, and renders the pipe truly indestructible. The prices are less than those of iron or lead. We also manufacture Basins and D. Traps, for Water Closets, on a new principle, which we wish the public to examine at 112 Fulton street, New York.

28th

J. BALL & CO.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS. The Subscriber is engaged in manufacturing Spring Steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address

JOAN F. WINSLOW, Agent,
Albany Iron and Nail Works,

46th

NICOLL'S PATENT SAFETY SWITCH for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee
G. A. NICOLLS,
Reading, Pa.

ja45

RAILROAD IRON.—THE SUBSCRIBER'S New Rail Iron Mill at Phoenixville, Pa., is expected to be ready to go into operation by the 1st of September, and will be capable of turning out 30 to 40 tons or finished Rails per day. They are now prepared to receive orders to that extent, deliverable after the 1st of October next, for heavy rails of any pattern now in use, equal in quality and finish to best imported.

PIG IRON.—They are also receiving weekly 150 to 200 tons of No. 1 Phoenix Foundry Iron, well adapted for light castings.

REEVES, BUCK & CO,
45 North Water St., Philadelphia,
or by their Agent, ROBT. NICHOLS,
79 Water St., New York.

28th

THE SUBSCRIBERS, AGENTS FOR

the sale of
Codorus,
Glendon,
Spring Mill and
Valley,
Pig Iron.

Have now a supply, and respectfully solicit the patronage of persons engaged in the making of Machinery, for which purpose the above makes of Pig Iron are particularly adapted.

They are also sole Agents for Watson's celebrated Fire Bricks and prepared Kaolin or Fire Clay orders for which are promptly supplied.

SAM'L. KIMBER, & CO.,
59 North Wharves,
Jan. 14, 1846. [1y4] Philadelphia, Pa.

river, (of which firm the subscriber was late a partner) under the immediate supervision of Mr. Ray himself.

Several sets of trucks containing the latest improvements have recently been turned out for the New York and Erie railroad, and the New Jersey Transportation company, which may be seen upon said roads.

The patronage of Railroad Companies and Car Builders is respectfully solicited.

New York, May 4, 1846.

W. H. CALKINS, and Others.

To all whom it may concern:—This is to certify that the New Haven, Hartford and Springfield railroad co., have had in use six sets of F. M. Ray's patent trucks for the last 20 months, during which time it appears to me, they have proved to be the best and most economical truck now in use.

[Signed,] WILLIAM ROE, Supt of Power.
I certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Philadelphia and Reading railroad for some time past, under a passenger car.

For simplicity of construction, economy in cost, lightness of material, and extreme ease of motion, I consider it the best truck we have ever used. Its peculiar make also renders it less liable to be thrown off the track, when passing over any obstruction. We intend using it extensively under the passenger and freight cars of the above road.

Reading, Pa., October 6, 1845.

[Signed,] G. A. NICOLL,

Supt Transportation, etc., Philadelphia and Reading Railroad.

To all whom it may concern:—This is to certify that the N. Jersey Railroad and Transportation company have used Fowler M. Ray's Truck for the last seven months, during which time it has operated to our entire satisfaction. I have no hesitation in saying that it is the simplest and most economical truck now in use.

Jersey City, November 4, 1845.

[Signed,] T. L. SMITH,

N. Jersey Railroad and Transp. Co.
This is to certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Long Island railroad for the last year, under a freight car. For simplicity of construction, economy in cost, lightness of material and ease of motion, I consider it equal to any truck we have in use.

Long Island Railroad Depot,

[Signed,] JOHN LEACH,

Jamaica November 12, 1845. } 1y19 Supt Motive Power.



RICH & CO'S IMPROVED PATENT SALAMANDER SAFES.

Warranted free from dampness, as well as fire and thief proof.

Particular attention is invited to the following certificates, which speak for themselves:

TEST No. 10.

Certificate from Mr. Silas C. Field, of Vicksburgh, Mississippi.

On the morning of the 14th ult., the store owned and occupied by me in this city, was, with its contents, entirely consumed by fire. My stock of goods consisted of oil, rosin, lard, pork, sugar, molasses, liquors, and other articles of a combustible nature, in the midst of which was one of Rich's Improved Patent Salamander Safes, which I purchased last October of Mr. Isaac Bridge, New Orleans, and which contained my books and papers. This safe was red hot, and did not cool sufficiently to be opened until 16 hours after it was taken from the ruins. At the expiration of that time it was unlocked, when its contents proved to be entirely uninjured, and not even discolored. I deem this test sufficient to show that the high reputation enjoyed by Rich's Safes is well merited.

S. C. FIELD.

Vicksburgh, Miss., March 9th, 1846.

Certificate from Judge Battaile, of Benton, Mississippi.

In October last I purchased one of Rich's Improved Salamander Safes, which was in the fire at the burning of my law office, and several adjoining buildings in this place, on the 17th of November last, at about half-past one o'clock A. M. of that day. The building was entirely consumed; and I take pleasure in stating that my papers in said safe were preserved without injury. A receipt book which was in said safe, had the glue drawn out of its leather back by the heat, and the back broken; but the leaves of the book, and the writing thereon, were entirely uninjured; and some of the writing which was of blue ink, was also left wholly uneffaced and not in the least faded. Said safe was by the fire heated perfectly red hot, and I do not hesitate to say, that said safe is a perfect security against fire. But the safe tumbled over during the fire, and being heated red hot, the outer sheeting of the door became pressed in, and the bolts of the lock bent, so that it could not be unlocked, and I had to have it broken open.

JOHN BATTLE.

Benton, Miss., December 27, 1845.

Still other Tests in the Great Fire of July 19, 1845.

The undersigned purchased of A. S. Martin, No. 138½ Water street, one of Rich's Improved Patent Salamander Safes, which was in our store, No. 54 Exchange place. The store was entirely consumed in the great conflagration on the morning of the 19th inst. The safe was taken from the ruins 52 hours after, and on opening it, the books and papers were found entirely uninjured by fire, and only slightly wet—the leather on some of the books was parched by the extreme heat.

RICHARDS & CROOKHITZ.

New York, 21st July, 1845.

One of Rich's Improved Salamander Safes, which I purchased on the 2d of June last of A. S. Marvin, 138½ Water street, agent for the manufacturer, was exposed to the most intense heat during the late dreadful conflagration. The store which I occupied, No. 46 Broad street, was entirely consumed; the safe fell from the 2d story, about 15 feet, into the cellar, and remained there 14 hours, and when found, I am told, and from its appearance afterwards, should judge that it had been heated to a red heat. On opening it, the books and papers were found not to have been touched by fire. I deem this ordeal sufficient to confirm fully the reputation that Rich's safe has already obtained for preserving its contents against all hazards.

(Signed.)

WM. BLOODGOOD.

New York, 21st July, 1845.

The above safes are finished in the neatest manner, and can be made to order at short notice, of any size and pattern, and fitted to contain plate, jewelry, etc. Prices from \$50 to \$500 each. For sale by

A. S. MARVIN, General Agent,

138½ Water st., N. Y.

Also by Isaac Bridge 76 Magazine street, New Orleans.

Also by Lewis M Hatch, 120 Meeting street Charleston, S. C.

16 U

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved SPARK ARRESTER, recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both passenger and freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits:

R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. McKee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city or to Hinckly & Drury, Boston, will be promptly executed. FRENCH & BAIRD.

N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms. Philadelphia, Pa., April 6, 1844.

*** The letters in the figures refer to the article given in the Journal of June, 1844. ja45

PATENT HAMMERED RAILROAD, SHIP

and Boat Spikes. The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscriber at the works, will be promptly executed. JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y. The above spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merriitt, New York; J. H. Whitney, do.; E. J. Etting, Philadelphia; Wm. E. Coffin & Co., Boston. ja45

MACHINE WORKS OF ROGERS,

Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

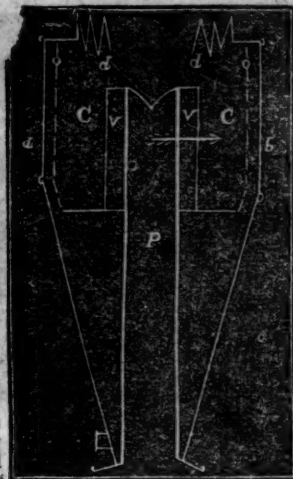
Railroad Work.

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns style and workmanship.

Mill gearing and Millwright work generally hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, 445 Paterson, N. J., or 60 Wall street, N. York.



PATENT RAILROAD, SHIP AND BOAT

Spikes. The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. York, will be punctually attended to.

HENRY BURDEN, Agent.

Spikes are kept for sale, at Factory Prices, by I. & J. Townsend, Albany, and the principal iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

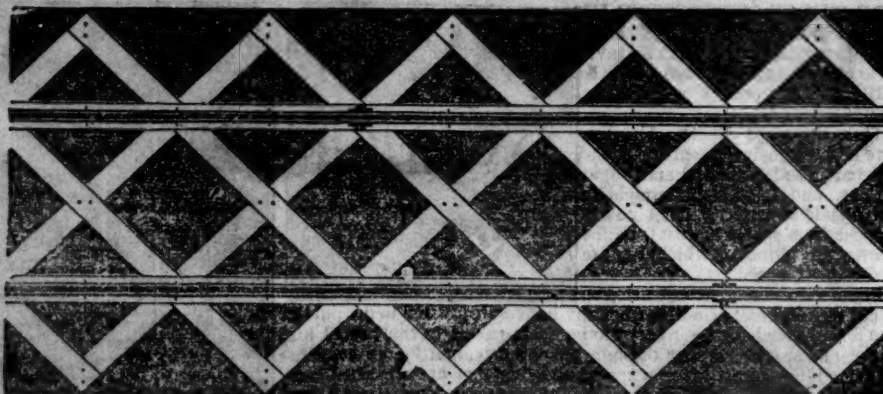
*** Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand. ja45

DAVENPORT & BRIDGES CONTINUE

to Manufacture to Order, at their Works, in Cambridgeport, Mass., Passenger and Freight Cars of every description, and of the most improved pattern. They also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices. All orders punctually executed and forwarded to any part of the country.

Our Works are within fifteen minutes ride from State street, Boston—coaches pass every fifteen minutes. ly1

THE HERRON RAILWAY TRACK,



As seen stripped of the top ballasting

A GOLD MEDAL AWARDED THE INVENTOR BY THE AMERICAN INSTITUTE.

THE UNDERSIGNED RESPECTFULLY invites the attention of Engineers, and Railroad Companies, to some highly important improvements he has recently made in the Herron system of Railway structure. These improvements enable him to effect a very large reduction in the quantity of Timber, and cost of construction, without impairing the strength of the Track, or its powers of resisting frost, while they secure additional features of excellence in the Drainage and facility of making Repairs.

The above cut represents the "Herron Track" as it is laid on the Philadelphia and Reading, and on the Baltimore and Susquehanna Railroads. The intersection of the sills of the trelis are 5 feet from centre to centre, while in the new construction they are only 2½ feet. This renders the string piece unnecessary, thus removing the only objectionable feature found in the Track.

The result of experience has proved that all Tracks constructed with longitudinal timbers, such as mud sills, and more especially, the continuous bearing string pieces retain the rain water that falls between the Rails, which, being thus confined, settles along those timbers, and accumulating in quantity flows rapidly along them on the descending grades, washing out the earth from under the timber, and frequently causing large breaches in the embankments of the road. Whereas all water intercepted by the oblique sills of the trelis, is discharged immediately into the side ditches.

In the 5 foot plan, the Track occupies a Road bed nearly 11 feet wide, while the new construction takes

but 8 feet; the timber being more concentrated under the Rails. A block of hard wood, about 2 feet long and 15 inches wide, is introduced into a square of the trelis for the purpose of giving an additional, and effectual support to the joints of the Rails, which rest upon it. Should these joint blocks become chafed and worn by the working, and imbedding of the chairs, as is now the case on all Railroads, they can be readily replaced without any derangement of the timbers less liable to wear.

The following is a general estimate of its cost near the seaboard. In the interior it will be considerably less.

ESTIMATE OF THE PROBABLE COST OF ONE MILE.

4,224 Timbers, 11 ft. long, 3 x 6 inches =	
68,696 ft. b.m., at \$10 =	\$686 96
587 Oak joint blocks 2 ft. x 3 x 15 in. =	
4,403 ft. b.m., at \$13 =	57 24
13,000 Spikes = 2,250 lbs. at 4½ cts. =	101 25
Workmanship free of patent charge =	600 00

Cost of one mile including the laying of the Rail.....\$1,445 45

He has made other important improvements, which will be shown in properly proportioned models, that give a much better idea of the great strength of the Track than a drawing will do.

Sales of the Patent right to all the distant States will be made on liberal terms.

JAMES HERRON.

Civil Engineer and Patentee.

No. 277 South Tenth St., Philadelphia. 33tf

ENGLISH ATENT WIRE ROPES—FOR THE USE OF MINES, RAILWAYS, ETC.—

for sale or imported to order by the subscriber.

These Ropes are manufactured on an entirely different principle from any other, and are now almost exclusively used in the collieries and on the railways in Great Britain, where they are considered to be greatly superior to hempen ones, or iron chains, as regards safety, durability and economy. The plan upon which they are made effectually secures them from corrosion in the interior, as well as the exterior of the rope, and gives a greater compactness and elasticity than is found in any other manufacture.

Many of these ropes have been in constant operation in the different mines in England, and on the Blackwall and other inclined planes, for three and four years, and are still in good condition.

They have been applied to almost every purpose for which hempen ropes have been used—mines, heavy cranes, standing rigging, window cords, lightning conductors, signal halyards, tiller ropes, etc. Reference is made to the annexed statement for the relative strength and size. Testimonials from the most eminent engineers in England can be shown as to their efficiency, and any additional information required respecting the different descriptions and application will be given by

ALFRED L. KEMP,

75 Broad street, New York, sole agent in the United States.

Statement of Trial made at the Woolwich Royal Dock Yard, of the Patent Wire Ropes, as compared with Hempen Ropes and Iron Chains of the same strength.—October, 1841.

WIRE ROPES.			HEMPEN ROPES.			CHAINS.			STRENGTH Tons.
Wire gauge number.	Circumference of rope.	Weight per fathom.	Circumference of rope.	Weight per fathom.		Weight per fathom.	Diameter of iron.		
	INCH.	LBS. OZ.	INCH.	LBS. OZ.		LBS.	INCH.		
11	4½	13 5	10	24 -		50	15-16		20
13	3½	8 3	8½	16 -		27	11-16		13½
14	3½	6 11	7½	12 8		17	9-16		10½
15	2½	5 2	6½	9 4		13½	1-2		7½
16	2½	4 3	6	8 8		10½	7-16		7

N.B. The working load, with a perpendicular lift, may be taken at 6 cwt. for every lb. weight per fathom, so that a rope weighing 5 lbs. per fathom would safely lift 3360 lbs., and so on in proportion.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.

No 23 Pear street,
1y10 near Third,
below Walnut,
Philadelphia.

LAP—WELDED
WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,
FROM 1 1-4 TO 6 INCHES DIAMETER,
and

ANY LENGTH, NOT EXCEEDING 17 FEET.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

1y25

28 Platt street, New York.

ENGINEERS and MACHINISTS.

THOMAS PROSSER, 28 Platt St. N. Y. (See Adv.)

J. F. WINSLOW, Albany Iron and Nail Works Troy, N. Y. (See Adv.)

TROY IRON AND NAIL FACTORY, H. Burden, Agent. (See Adv.)

ROGERS, KETCHUM & GROSVENOR, Paterson, N. J. (See Adv.)

S. VAIL, Speedwell Iron Works, near Morristown, N. J. (See Adv.)

NORRIS, BROTHERS, Philadelphia Pa. (See Adv.)

FRENCH & BAIRD, Philadelphia. (See Adv.)

NEWCASTLE MANUFACTURING COMPANY, Newcastle, Del. (See Adv.)

ROSS WINANS, Baltimore, Md.

CYRUS ALGER & Co., South Boston Iron Co.

SETH ADAMS, Engineer, South Boston.

STILLMAN, ALLEN & Co., N. Y.

JAS. P. ALLAIRE, N. Y.

PHENIX FOUNDRY, N. Y.

ANDREW MENEELY, West Troy.

JOHN F. STARR, Philadelphia, Pa.

MERRICK & TOWNE, do.

HINCKLEY & DRURY, Boston.

C. C. ALGER, Stockbridge Iron Works Stockbridge, Mass.

THE AMERICAN RAILROAD JOURNAL

is the only periodical having a general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

RATES OF ADVERTISING.

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	